



BUSINESS TECHNOLOGY LEADERSHIP

**BUSINESS
PROCESS
MANAGEMENT**

Tools that won't
bust your budget

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**STAFF
DEVELOPMENT**

How to become a
talent magnet
and magnifier

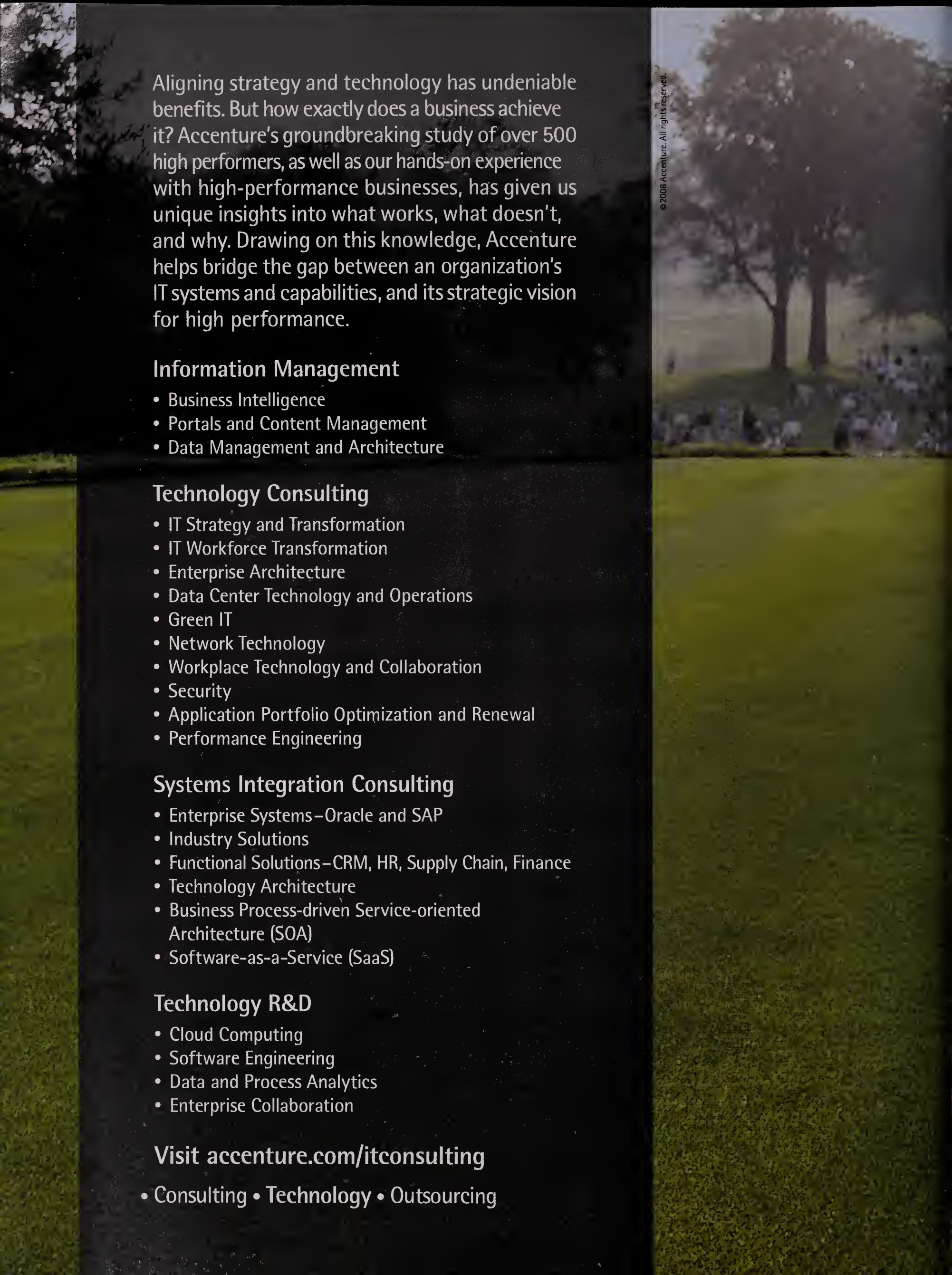
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Rising fuel prices present new opportunities for
railroads. IT is powering the engine of growth. Page 28

INVESTING for the LONG HAUL

BY STEPHANIE OVERBY





Aligning strategy and technology has undeniable benefits. But how exactly does a business achieve it? Accenture's groundbreaking study of over 500 high performers, as well as our hands-on experience with high-performance businesses, has given us unique insights into what works, what doesn't, and why. Drawing on this knowledge, Accenture helps bridge the gap between an organization's IT systems and capabilities, and its strategic vision for high performance.

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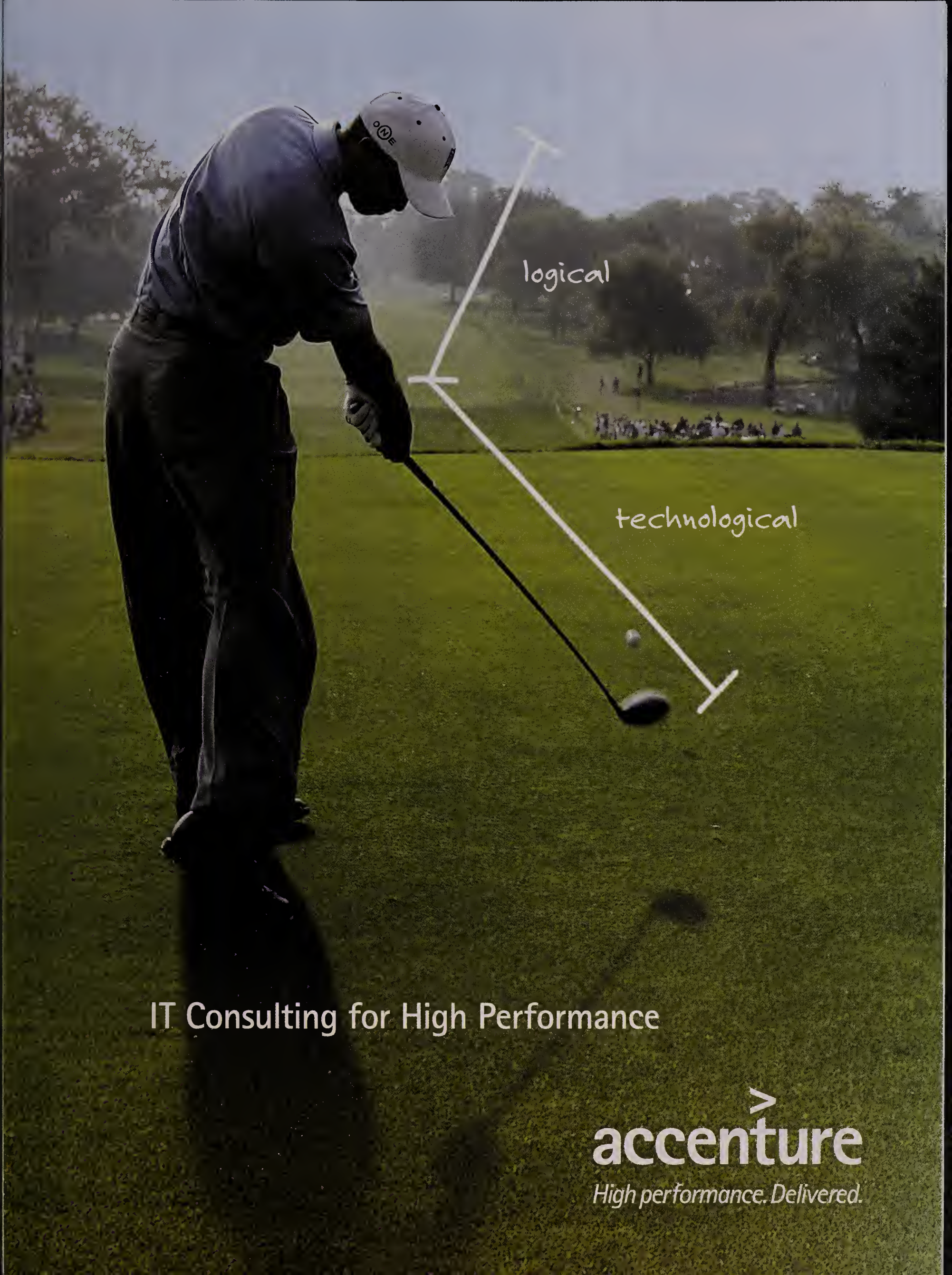
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A Business Case for Unified Communications

Using Business Process Automation to Maximize UC Benefits

Donald E. Brown, M.D.

CHAIRMAN OF THE BOARD, PRESIDENT AND CEO, Dr. Brown co-founded Interactive Intelligence, his third software company, in 1994. He graduated from Indiana University School of Medicine in 1985, and also earned degrees in computer science and physics.

What is the bottom-line business case for unified communications?

Defined narrowly, unified communications doesn't present a very strong business case. When people talk about it, they're often pinpointing features like presence, messaging or video. Those features are great, and they offer soft benefits like improved communications and efficiency, but they're very difficult to quantify in terms of hard business ROI.

Look for solutions that merge BPA and unified communications and apply technologies that have proven useful in the context of the contact center.

How can CIOs demonstrate real value in unified communications?

Unified communications starts to demonstrate significant value when it becomes part of business process automation (BPA), which lends itself to easily quantifiable benefits. For example, with BPA, an insurance company can handle more application transactions. It's easy to assign a quantitative value to, say, the hour that's shaved off the time it takes to process each application. So it's within this context of BPA that unified communications makes the most sense.

How do BPA and unified communications come together?

One of the ways they come together is through what Gartner describes as Communications-Enabled Business Processes, which is about adding communi-

cations capabilities to existing processes. For example, if an assembly line breaks in the middle of the night, the existing process can use unified communications to set up a conference call with the people needed to address the problem. But the greater value comes with a process automation platform that's integral to the communications system; not only can you launch that call and leverage capabilities like presence, VoIP, queue-

ing and routing, but you'll also use those functions to automate the process.

What should CIOs look for in solutions to fulfill that business justification?

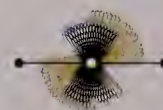
Look for solutions that merge BPA and unified communications and apply technologies that have proven useful in the contact center. For example, technology that queues an incoming call can be applied in an insurance company to deliver a claim request to the next available underwriter certified in the applicant's state of residence. Today, BPA systems are typically difficult to use, expensive to implement and rely on programming interfaces to automate key processes. CIOs will find greater value in a unifying, easy-to-use process automation platform that comes out of contact center and unified communications technologies.

What objections might CIOs expect as they pitch their case?

Process automation cuts across multiple areas in the company, so the challenge is always in getting broad executive-level buy-in along with departmental agreement. Certain processes need to be automated through a centralized approach. Here, you're dealing with entrenched interests where departments have their own applications and systems that handle their part of the process. You can solve this with an overarching approach that provides consistent automation and centralized visibility into the process that can be accessed across departments. So it's really a matter of getting people to agree to what needs to be done—and that always means giving up some level of control to IT.

FOR MORE INFORMATION:

Check out the White Paper "The Interaction Center Platform," a foundation for IP communications and comprehensive process automation, at www.cio.com/whitepapers/inin-uc.



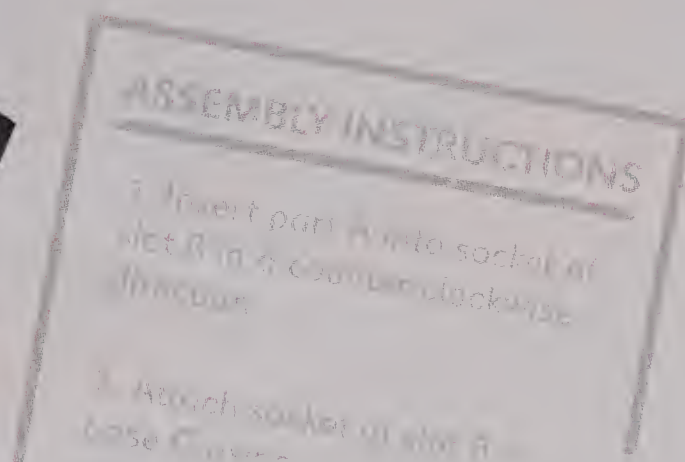
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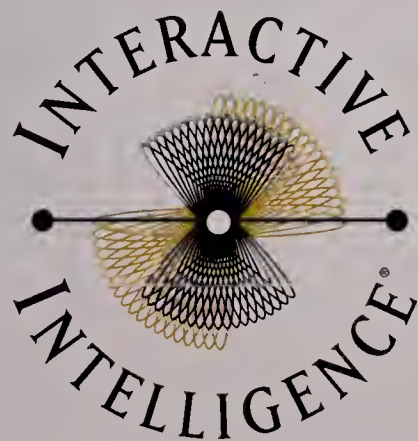
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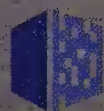


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is investing in software
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By Karan Sorenson

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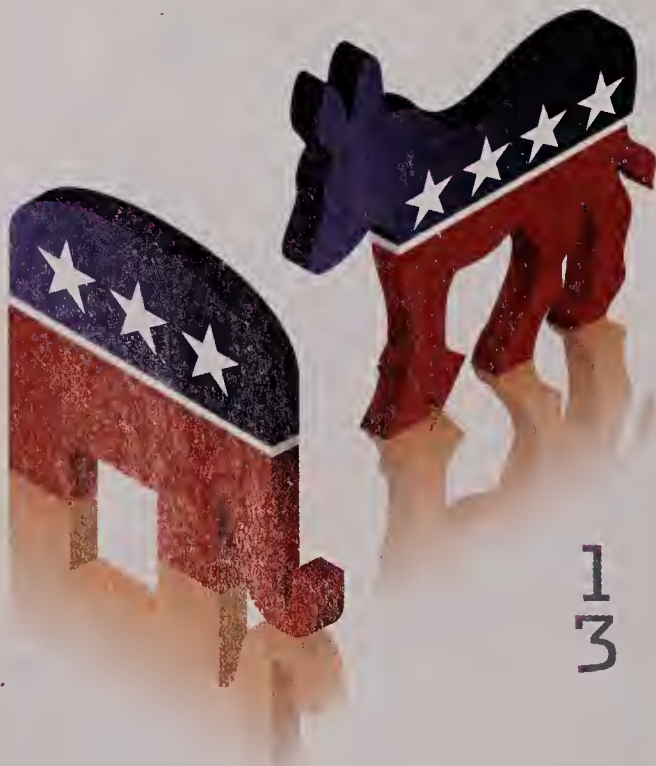


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CIO Online

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Why CIOs Think Application Developers Are Clueless

CIO.com has published several stories that examined the sometimes volatile, often misunderstood and never dull relationship between CIOs and application developers. Sure, CIOs can be clueless. But so can the programming staff. It's time for the other side of the story: CIOs and IT managers explain just how out of it their application development staff can be. [»www.cio.com/article/447189](http://www.cio.com/article/447189)

[STAFFING]

SHOULD HE BE FIRED?

In this case study, we ask you if you'd keep a problem employee on staff, or if you'd invite him to "explore other career opportunities."

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[SOCIAL NETWORKING]

LEARNING FACEBOOK'S NEW PRIVACY SETTINGS

Facebook learned from its mistakes with the Beacon advertising incident and rolled out a security system that allows users to control who sees what information. We show you how to use the new settings to your advantage.

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[TELECOMMUTING]

Our Guide to Working From Home

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Investing to Grow

IT helps railroads be efficient and build for the future



Railroads are romantic. My own brother took a perfectly good education from Northwestern University and parlayed it into a job as a brakeman on the Chicago North Western Railway (too much Kerouac during his formative years). Of course, the move has long since paid off; after going back to school for a master's in business administration, he went on to become an executive there and at other railroad companies.

So when I began my travels this year to meet with CIOs in their offices, one visit I was really excited about was BNSF. There's nothing like a locomotive and miles of track through remote country to ignite the imagination! What I didn't expect to find was a lot of sophisticated IT. Yet that icon of the American past, the iron horse, has incorporated technology into just about everything it does, as Stephanie Overby found in reporting our cover story, "Investing for the Long Haul."

IT helps the railroads route trains more efficiently, letting them increase capacity virtually without spending as much to lay new track. Fuel-optimization systems calculate the best speed at which to operate the train, based on many variables. Sensors reveal if any wheels have warped, increasing safety and fuel efficiency.

At intermodal terminals, there's software to manage millions of "lifts" (the movement of a container or trailer to or from a railroad car), scheduling movements efficiently and keeping shippers and receivers informed of the boxes' whereabouts. Automated gate systems use optical character recognition, digital cameras and VoIP-enabled communications kiosks to help truck drivers get their containers to the right train on time, improve safety, reduce gate processing time and reduce the time drivers (and idling trucks) spend inside the terminal. And there's more.

What's driving the industry's embrace of IT is not just the desire to increase operating efficiency today but also the need to support continued growth tomorrow. Therein lies the challenge. Railroads have to increase their earnings now to justify large capital investments. IT can help accelerate those earnings and mitigate some of the need for big investments by creating more virtual capacity.

Railroads are unique in that they spend more on capital improvements than many other businesses (17 percent of revenue, compared with just 3 percent for the average retailer, for example). Yet in one regard, they are the same: How they leverage technology today will determine how strongly they'll roll into the future.

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WHAT DO YOU HAVE TO SAY?



Still Clueless

When CIOs don't engage customers, companies lose



Is corporate marketing more art or science?

In this age of downloads, uploads, white papers, green papers, IM and an addiction to leads, marketing mostly marches to the beat of scientific metrics. But I would argue that marketing in the 21st century is not a science. Nor is it an art.

It is a conversation among and between your company's customers and prospects. You'd better be part of it. You'd also better be deploying technology to make those conversations happen.

Who promulgated this "conversation" theory? Surely the folks at Facebook, LinkedIn, Google or MySpace, right? Wrong! It was four guys—Rick Levine, Christopher Locke, Doc Searls and David Weinberger—who in 2000 published *The Cluetrain Manifesto: The End of Business as Usual*.

The book takes readers through 95 ways they can engage with their customers and prospects, largely through the Internet. It places the onus on the CIO for making those conversations happen successfully—by using powerful technology that a firm deploys to reach out to the customers in the ether.

But sadly, the overwhelming majority of CIOs are not part of those customer conversations. When we asked CIOs, "With whom do you meet regularly?" only 9 percent said, "Customers."

Twenty-eight years ago, a McGraw-Hill magazine published an article advising marketers on how to get people to do what they want them to do. The bias was in favor of corporate marketing departments controlling the conversation—and economic activity—with customers.

Now, the customer is in control. And while many companies continue to rely on metrics to determine marketing success, such as the number of times their white paper was downloaded, determining the content of subsequent conversations about such material is the surest path.

Marketing in the 21st century is now all about how customers get companies to do what they want them to do. Powerful social networking tools allow you to find out how you can work better for your customers. Hop over to Amazon.com and buy a copy of *The Cluetrain Manifesto*. It remains the seminal book written on the power of social networking. Even more important, get out and see more customers!

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trendlines

EDITED BY STEFF GELSTON

NEW * HOT * UNEXPECTED

Virtualization the Disney Way

VIRTUALIZATION You don't have to be a tween to know that the Disney Channel original movie *Camp Rock* was a summer sensation, drawing some nine million television viewers. To capitalize on the success, Disney decided to post the movie on Disney.com for a day, along with interactive features like the ability to chat online with other viewers, and take polls.

With a window of 60 days to get the movie on the site, Disney's Interactive Media Group relied on a combination of virtualization, load balancing and content delivery networks (CDN). About 25 servers were provisioned for different parts of the architecture to balance the load of the anticipated increased traffic, says Bud Albers, the group's CTO.

The group had done virtualization projects before, but never of this magnitude. The strategy was to scale server capacity based on demand, he says. Deploying a physical infrastructure was not an alternative. "There wasn't time to do it any other way," Albers says, since Disney had to gather requirements, features and content, and then come up with a production schedule. The goal, adds Adam Fritz, principal software engineer for the interactive media group, was to ensure capital and operating efficiencies as well as the

Continued on Page 16



Wi-Fi Just Wants to Be FREE

WIRELESS Wi-Fi hot spots have exploded during the last several years. Best-guess estimates range from 33,000 WLAN hot spots worldwide to more than 250,000.

Customers now expect wireless LAN connectivity inside everything from restaurants to airports, hotels and hospitals. But something else has also become part of customers' expectations: free Wi-Fi. Nearly 50 percent of respondents say they would only use a free hot spot, according to a recent In-Stat survey.

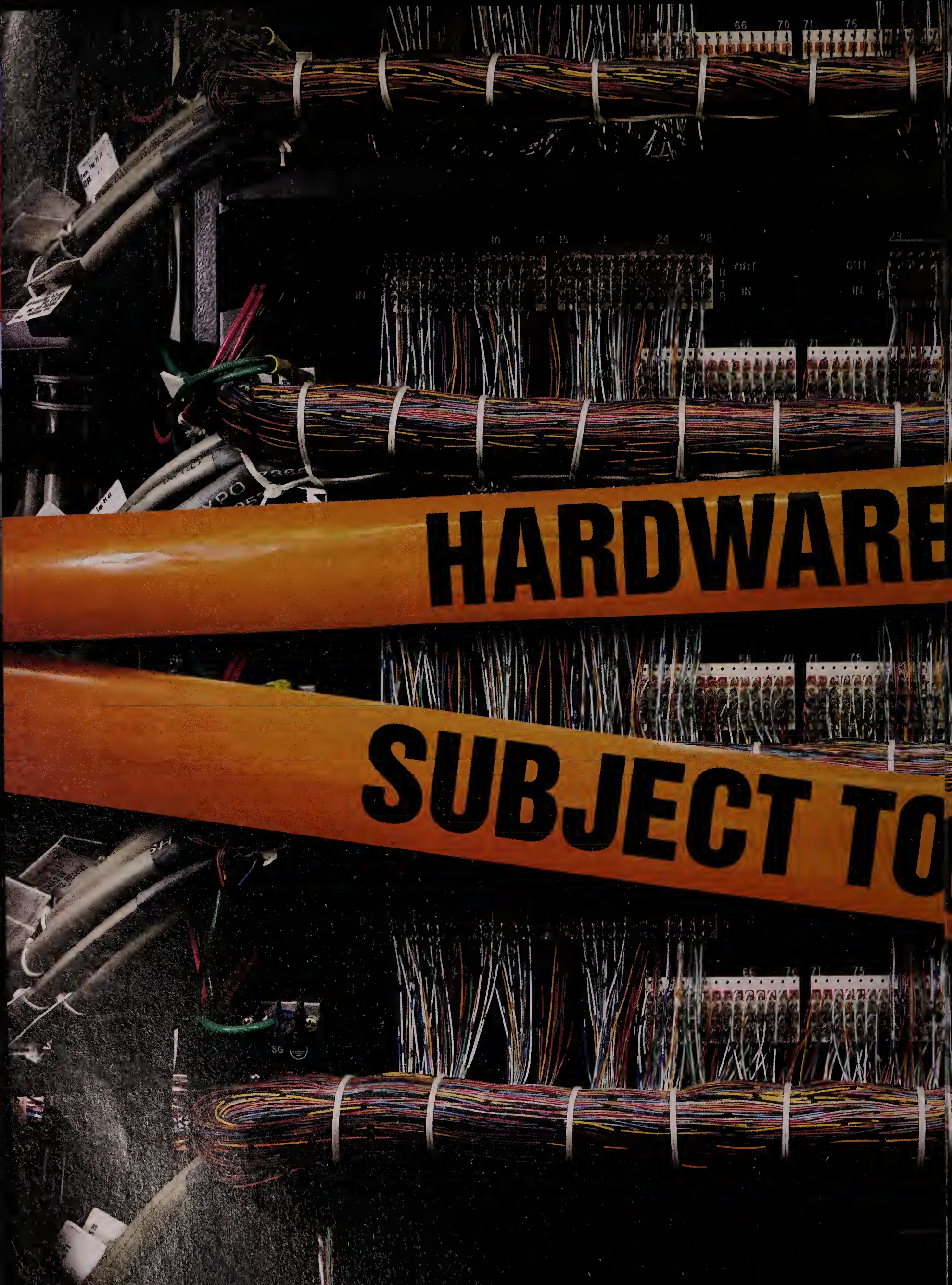
Cost is one factor, notes In-Stat senior analyst Daryl Schoolar. What also factors into reluctance to pay for the service is the perception of a lack of value. "You pay X dollars per session, and you can only use it at a few locations," he says. The proliferation of free Wi-Fi hot spots, he notes, also "makes it challenging to get people to pay."

It's not surprising, then, that In-Stat data showed hot spot access revenues are not keeping pace with usage growth. "The explosion of free sites is really driving the market," Schoolar says. So hot spot operators are looking at other ways to generate revenue.

"Operators have started bundling hot spot access with other services, such as fixed and mobile broadband," according to the In-Stat report. And collecting hot spot revenue is easier in some captive settings, like an airport or hotel, Schoolar notes. "Hot spot owners are still charging if they control a prime location like airports, where there is no alternative," he says.

Other WLAN operators charge for access because that's their business model. However, a decline in access revenues will begin in 2010 in the U.S., Schoolar predicts.

—Thomas Wailgum



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MEDIA Coming soon to a TV near you: widgets.

Intel and Yahoo are developing a hardware and software platform designed to meld television and the Internet. TV sets, cable set-top boxes and optical media players built with special Intel processors and supporting a Yahoo software framework will allow people to integrate lightweight "widget" applications into their viewing experience that complement TV watching with online functionality. This includes interacting with friends and buying products online, say Intel and Yahoo.

The Yahoo TV application framework is called the Widget Channel and is designed for consumer electronics devices built with the accompanying Intel system-on-a-chip media processors. Widget Channel developers will be able to create TV applications using languages like JavaScript, XML, HTML and Flash.

While there have been past attempts to merge TV and the Internet, Yahoo and Intel are confident their approach will strike a chord with the mass market. TV viewers will get access to a widget gallery where they can choose applications. The widget approach is designed to be nonintrusive and to adapt to the TV experience by, for example, not requiring viewers to use a keyboard but rather use remote controls for interacting with the applications.

Yahoo and Intel expect to see devices hit the market in early 2009. Companies planning to develop and deploy widgets include Blockbuster, CBS Interactive, Disney-ABC Television Group, eBay, GE, MTV and Samsung Electronics.

Yahoo will generate revenue through advertising on the service.

—Juan Carlos Pérez and Agam Shah

Disney Virtualization

Continued from Page 13

ability to remain agile by relying upon virtual machines.

Other Disney sites, including ABC news and ESPN, are hosted by the same facility, "so we were able to spread our load and use 25 different machines that weren't at a peak time. We were able to hold the peak load and there were no incremental capital costs," says Albers.

Disney.com also used a dynamically integrated environment incorporating video, game images and community elements, which were rolled out to Disney.com when the site relaunched 18 months ago. The group relied on two CDNs, Akamai Technologies and Lime-light Networks, to help meet the volume for multiple types of content delivery. Instead of having the user requests come in to Disney's group, they were sent to nearby CDN nodes, says Fritz.

According to Disney's internal tracking, the site hit a daily record with 3.2 million visitors, increasing traffic to Disney.com by 37 percent on June 23. It received more than 860,000 video plays for the one-day event. Albers says the event proves the scalability of a virtualization scheme, which will be an advantage for future events where huge online traffic spikes are anticipated.

Major events with mass appeal require a flexible architecture and the ability to reallocate existing server capacity, agrees Melanie Posey, a research director at IDC (a sister company to CIO's publisher). "That's the advantage of virtualization technology," she says—using a combination of load balancing, CDN and corralling underused servers. "Having the ability to reallocate server capacity that already exists is easier and more time efficient for the company that's providing the content than getting a physical server, installing it and configuring it."

—Esther Shein

TRENDLINES

CIO RESEARCH

What You Want

What do you ask for during job negotiations?

Here is a list of the most common requirements cited by respondents to a recent CIO.com survey.

Benefit	Percentage Asked For
Salary	83%
Bonuses	56%
Vacation/Time off (paid or unpaid)	48%
Relocation expenses	28%
Flex time	27%
Education & training	24%
Stock options	24%
Health care (medical, dental, vision)	20%
Perks (free parking, company car)	18%
Severance package	12%

The Shift Toward Enterprise 2.0

WEB 2.0 TECHNOLOGIES BRING BENEFITS AND CHALLENGES TO THE ENTERPRISE, AND CIOs MUST MANAGE THIS TRANSFORMATION IN A SECURE AND EFFICIENT WAY.

CIOs are both eager and cautious about bringing Web 2.0 tools into the enterprise and transitioning to an Enterprise 2.0 environment.

On the positive side, community-building networking applications and services can effectively link customers, suppliers, partners, and employees for fast and easy collaboration, which can quickly lead to greater productivity, effective data sharing, visibility into business processes, and ideally, improved profitability.

But on the flip side, Web 2.0 technologies come with myriad risks: business-inappropriate content or applications finding their way on to company computers; the increased possibility of viruses, worms, and malware; and accidental or malicious data loss.

Enterprises are still exploring the best uses of Web 2.0. **Corporate sales and marketing departments have taken the lead, using social applications to enhance customer relationships, attract new audiences, and heighten brand awareness.** For example, Dell offers a community network that provides communication forums, idea centers, blogs, and feeds that keep visitors informed, as well as provides opportunities to learn, participate, and collaborate.

Other organizational departments are taking advantage of Web 2.0 as well. For example, IT departments have created internal wikis and blogs to keep employees up-to-date with company information and allow for easy communication.

2.0 CHALLENGES

Even though Web 2.0 has many advantages, it still poses significant risks. The new network perimeter is no longer a building with walls and network cables, and securing it is becoming as difficult as defining it. Users now demand anytime access from anywhere,

using laptops, remote kiosks, and PDAs to access corporate information. So if you're sitting at a coffee shop accessing Webmail, communicating with friends, and updating your blog, are you inside or outside the company network?

Although most organizations have established standard protections such as e-mail filters, firewalls, and virus signatures, **the ingenuity of hackers means that viruses, worms, and malware take on new shapes and infiltrate in new ways.**

Furthermore, because many Web pages and sites can no longer be classified as simply "good" or "bad," reputation is becoming less reliable as an indicator of threat potential. For example, Google may be trustworthy in and of itself, but users who build their own iGoogle portals with content coming from non-Google sites are beyond the hosting site's control.

These challenges may lead some people to believe that Web 2.0 should be banned in the workplace. Realistically, this is nearly impossible. Due to the increasing use of mobile devices, cloud computing, software-as-a-service models, and customer portals, Enterprise 2.0 is inevitable.

The new approach is to say "Yes" to Web 2.0 as a way of empowering employees to be more technologically efficient, and encouraging the Employee 2.0 mentality. The trick is to combine Web 2.0 technologies with the appropriate security measures.

But how can you, as CIO, give employees all the functionality and rich experiences of Web 2.0 without opening the door to attacks, viruses or other threats?

To find out how you can take control, secure the enterprise, and say "Yes" to the advantages of Web 2.0 connectivity, download the white paper "Enabling Enterprise 2.0" at www.cio.com/whitepapers/websense

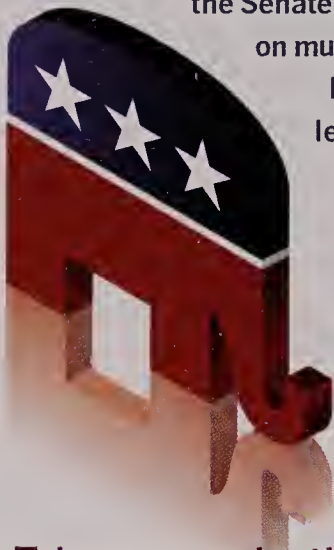
Where the Candidates Stand on **TECHNOLOGY**



POLITICS The 2008 presidential election gives CIOs and other IT executives a choice of two major-party candidates who are interested in technology-related issues. While the U.S. economy and the war in Iraq have dominated the debate between Republican nominee Senator John McCain and Democratic nominee Senator Barack Obama, they have also hit on such IT hot buttons as telecommunications and tech jobs.

Both senators bring tech experience to the race, although the experience is significantly different. Obama has had relatively little legislative experience related to technology, but he's a self-described text-messaging addict who released a lengthy tech policy paper last November. McCain admits he doesn't spend much time with computing devices, saying he relies on his wife's help with computers. But he's also a long-time member of the Senate Commerce, Science and Transportation Committee, the panel that debates and votes on much of the tech-related legislation that goes through the Senate.

Here's a look at the candidates' stances on five issues of interest to the nation's IT leaders: telecommunications, national security, privacy, IT jobs and innovation.



Telecommunications

Net neutrality ★ Obama has long supported the passage of Net neutrality laws or rules. "A key reason the Internet has been such a success is because it is the most open network in history," his tech paper says.

McCain opposes a Net neutrality law, saying broadband carriers need to recoup their investments. However, his tech-policy paper says he would focus on allowing broadband customers access to the Web content and applications of their choice. Instead of a law, the best way to guard against unfair practices is "an open marketplace with a variety of consumer choices."

Rural broadband deployment:

Obama calls for policies to encourage next-generation broadband deployment, including rural areas and inner cities. He supports government programs to bring broadband to schools, libraries and hospitals, and called for

public/private partnerships to help roll it out in areas without service.

McCain would encourage private investment in broadband service. In 2005, he split from many other Republicans by authoring legislation that would prohibit states from outlawing municipal broadband projects.

Competition in the wireless

spectrum ★ Obama has called for a review of existing uses of the wireless spectrum, and he wants government agencies to come up with "smarter, more efficient and more imaginative use" of the spectrum they control.

McCain has long advocated and voted for putting more spectrum in the hands of mobile phone carriers and broadband providers. In recent years, he pushed for a nationwide voice and data network for public safety agencies and was a leading voice in the Senate in the effort to get television stations to give up part of their analog spectrum for use by police and fire departments.

National Security

Government surveillance ★ Both candidates voted for a recent bill to revamp the U.S. government's surveillance programs and bring a controver-

sial National Security Agency program under court oversight. However, Obama opposed the bill's language that would likely give telecom carriers immunity from lawsuits. McCain wanted congressional hearings before granting telecom immunity.

Privacy

McCain has coauthored several bills, including one in 2000 requiring websites to post privacy policies on their use of personal information. He was coauthor of the CAN-SPAM Act, a 2003 law setting the rules for sending unsolicited commercial e-mail. He also pushed for rules to set standards for business' protection of personal data. "Americans will fully embrace new technologies...when they are confident that these new advances can be used safely," his website says.

Obama wants to restrict how databases containing personal information are used. He'd increase the Federal Trade Commission enforcement budget to fight spam, spyware, phishing and other cybercrime. Obama would also focus on ensuring that electronic health records are secure, his position paper says.

Continued on Page 20



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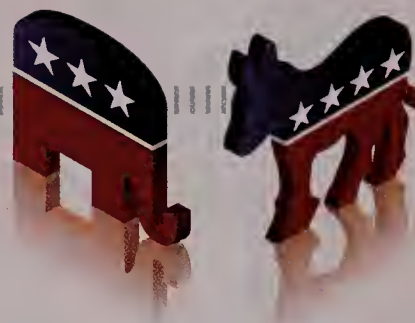
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Candidates on **TECHNOLOGY**

Continued from Page 18



IT Jobs

Outsourcing ★ Obama wants to end tax breaks for companies that ship U.S. jobs overseas. McCain opposes efforts to restrict U.S. agencies from outsourcing some services.

Math and science education ★ Both candidates have called for an increased focus on training U.S. students and workers for 21st-century jobs. Both have called for programs that increase the number of students studying math and science. McCain wants more money for retraining U.S. workers. Obama wants to improve U.S. schools' curricula and supply schools with computers and broadband.

H1-B visas ★ McCain says U.S. workers should have the first chance for high-paying tech jobs, but he

has also called for an increase in the number of H-1B foreign-worker visas.

Obama questions the need for more H-1B visas, but he's also called for reform of immigration programs, including ways for immigrants to become permanent residents.

Innovation

R&D tax credit ★ Both candidates called for a permanent extension of an expired R&D tax credit for U.S. companies.

Renewable energy ★ Obama has made renewable energy a campaign centerpiece. He's called for a government investment of \$150 billion over the next decade to encourage development of biofuels, hybrid cars and solar and wind energy. He would double federal science and research funding for clean-energy

projects and create a \$10-billion-a-year clean-tech venture capital fund.

McCain has said renewable energy sources are a part of the solution needed for U.S. independence on foreign oil, but he's largely focused on pushing for offshore oil drilling.

—Grant Gross

CORRECTION Our listing of Ingersoll-Rand executives in the story "2008 CIO 100: The Honorees" (Aug. 15, 2008) omitted the title of Jim Bolch, who is senior vice president and president of industrial technology. Bolch and VP of IT Tim Fleming are affiliated with the company's industrial technologies sector. In the same story, we inadvertently left out part of the name of Limited Brands' Bath & Body Works stores.

We regret the errors.

Home Depot Nails Down New CIO

ON THE MOVE Home Depot has found a replacement for CIO **Bob DeRodes**, who announced his decision to retire from the home improvement retailer last April. Home Depot has hired **Matt Carey** as its new EVP and CIO. Carey most recently served as eBay's SVP and CTO. In his new role with Home Depot, Carey reports to Chairman and CEO **Frank Blake**. DeRodes will remain with Home Depot until Carey's transition into the company is complete. Prior to eBay, Carey worked for Wal-Mart for more than 20 years. His



Matt Carey

accomplishments there include managing the rollout of its radio frequency infrastructure, large mainframe systems and data warehouse. He was also involved in the development and integration of Walmart.com and Samsclub.com.

Southwest Airlines hired **Bob Young** as its new VP and CTO to lead its infrastructure teams, which include test and deployment, application and data architecture, tech services operations support, and tech services field support. Young flew into Love Field from a

multibillion-dollar electronics company where he was responsible for supporting a \$20 billion business unit.

Scottrade promoted **Joan Albeck** to CTO. Albeck's promotions comes two months after *CIO* recognized her as a technology leader to watch. She is the online investment company's first CTO. Albeck had served as Scottrade's director of IT infrastructure. In her new role, she oversees all IT infrastructure-related design, implementation and support, and leads a team of 100 associates who support the data center and corporate network. Albeck has worked for the company since 2005.

—Meridith Levinson

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Business process management requires BPM tools, right? Not always. In some cases, there are other process management tools that can do the job for less.

BPM Without Busting the Budget

BY BILL SNYDER

BPM | Managing a global transportation network featuring shipments by truck, plane and ship is difficult enough. But managing the sea of data that surrounds that network can be even tougher, and that was becoming a challenge for YRC Worldwide.

Many shipments the \$9.6 billion company moved were accompanied with corresponding paper documents, including purchase orders, bills of lading, tracking stickers, proof of delivery and, ultimately, an invoice. What's more, much of that paperwork was exactly that—paper, says Michael Rapken, YRC's CIO and executive vice president. (For more on YRC, see "Investing for the Long Haul," Page 28.) "The [order-entry] process was manually intensive. Customers could make mistakes on forms. So could our order-entry people," he says. Mistakes were one issue, productivity was another. It was simply taking too long to complete each transaction.

YRC didn't look at the problem in isolation. Rapken and his team realized that the order-entry issue was an opportunity to rationalize key parts of YRC's business process and IT structure, parts of which run on mainframes. But the company was not about to rip up and replace its existing systems. Instead, it undertook a carefully modulated

deployment of business process management (BPM) and document management software. The result: "A huge success. We saw an average increase in productivity of 50 percent for order-entry people," says Rapken. And the bill was not enormous; it was approximately \$500,000 for the heart of the project.

Business process management can be a very scary phrase. It conjures up visions of a years-long project and multimillion-dollar consulting bills. But it doesn't have to be that way. Companies like YRC and others are discovering that you don't always need a traditional BPM tool when it comes to solving a specific business problem. While some situations absolutely require them, companies are finding that putting other process management tools to work can yield significant ROI without busting the budget.

First, Define Your Project

If there were a top 10 list of confusing IT buzzwords, BPM would be right up there. It's like the old story of the blindfolded men touching an elephant and trying to figure out what it is, says Forrester Research senior analyst Craig Le Clair. "Some BPM vendors feel like integration tools, others feel like rich human tools for participating in processes and others feel a lot like document management systems or packaged business apps," he says.

Before getting serious about BPM, suggests Le Clair, ask yourself and others in the organization (not just IT): Do your processes involve mainly people, documents and decisions? Or is most of the action behind the scenes and system to system? The answers can help you decide whether you need a classic BPM solution.

Document-intensive processes, such as order entry, billing or tracking, can create major headaches when not integrated with the overall flow of a company's business process. Yet the potential to solve these problems through the use

of business process management software—or tools that are closely related—is often overlooked, says Le Clair. In some cases, a solution that looks a lot like enterprise content management will do the trick, while full-bore BPM would be overkill.

Case in point: Under Armour, a \$675

"Not everything has to be done with new technology. Sometimes it makes sense to teach an old system new tricks."

—Michael Rapken, YRC CIO

million seller of performance-oriented apparel and footwear for athletes. Like many clothing manufacturers, the Baltimore company has sharp spikes in order and supply chain data as it gears up for seasonal product shifts or promotional pushes, says Steve Walker, UA's manager of supply chain systems.

Much of UA's seasonal product information is developed in an external product development system, then manually created in the SAP Business Suite. That was a problem. Pricing data, for example, changes radically every spring and fall; keying in that information could take up to two weeks. Not only was it slow, but the process led to errors and irritated high-level employees who were forced to spend time entering data. "SAP is great for automatic processes, but we needed to push the data through and we had to do it manually," says Walker.

UA's IT team first attempted to solve the problem with a data conversion program, but it turned out to need too much maintenance. SAP offers a built-in testing tool that might have been a workaround, but it was too difficult for end users, says Walker.

For an initial cost of about \$25,000, in early 2008 UA deployed an add-on system from Winshuttle to automate the product creation process by importing data from an Excel format into SAP. Administrators write scripts

in transaction Shuttle that are somewhat analogous to macros; they then push them to users, who can run them in a related application called runShuttle. Little or no programming is needed, says Walker.

The payoff was substantial. One step in the product-creation process

consumed roughly 560 person-hours when done manually; when automated, the same task drops to 112 hours, an improvement of about 80 percent, says Walker. "That's just material creation. Do that 12 times a year and it really adds up," he adds.

Good ROI, to be sure, yet Winshuttle doesn't even bill itself as a BPM vendor. Big ERP apps like SAP's often have areas that need to be complemented in order to manage a process, and that's where Winshuttle and similar products play a role.

Complexity Determines Tool Choices

Conceptually, at least, Under Armour's deployment was fairly straightforward. But other document- or system-intensive processes are more complex, requiring careful process mapping, which companies often find difficult. Indeed, many still resort to mapping by pencil and paper, says Neil Ward-Dutton, research director of Macehiter Ward-Dutton, a U.K.-based analyst and advisory firm.

Level 3 Communications, an international provider of fiber-based communications services, faced a huge mapping challenge as it developed the Unity Program. Unity is a three-year effort to overhaul the company's overgrown infrastructure, which had swelled to some 1,200 applications as it digested eight newly acquired companies, says

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In some cases, a solution that looks a lot like enterprise content management will do the trick, while full-bore BPM would be overkill.

Rob Smallwood, Level 3's senior vice president for IT. The plan included efforts to inventory and integrate disparate systems from the acquired companies and refresh the process and application architecture to provide a single, consolidated platform for sales, service delivery and billing.

The company had been documenting its business processes via Visio and Powerpoint, although Smallwood jokes that "you might have found something on a napkin at a branch office or two as well." Napkins or not, the process was too cumbersome and lacked flexibility.

Given the complexity of the task, it was clear Level 3 needed full-blown BPM tools, including one enabling it to map its new set of processes.

In 2006 the company introduced Savion BusinessManager, which gave the business process managers and IT the ability to handle processes from modeling and simulation through execution and monitoring. The deployment was successful; instead of taking a quarter or so to implement a new process, IT can handle the job in two to four weeks, says Smallwood, and the application count is down to about 400.

The BPM software was an important part of the transformation, but the IT exec emphasizes that the company underwent a cultural shift as well. "We did not have the business process team aligned with IT from day one," he says.

That changed. High-level executive sign-off on major IT projects is always

important, of course, but Level 3 CEO Jim Crowe went further, becoming an advocate for the project, both internally and externally. Crowe's support, says Smallwood, made it easier to convince line-of-business staffers that changing some ingrained habits was vital.

A Cost-Effective Approach

As YRC's IT team worked to streamline the company's order-entry process, it looked at data relating to eight months of shipping history, or approximately 8 million shipments. It became clear that customers consistently ship to the same sites; in fact, half of shipments reviewed fell into predictable patterns, or pairs composed of shippers and consignees. As a result, YRC employees repeatedly entered the same billing information.

It also became clear that entering the same billing information again and again was unproductive and expensive. To solve this, the company built a proprietary application on top of its mainframe systems. Called CABE, for computer assisted bill entry, the software analyzes prior entries. When it detects a repetitive series of transactions between a shipper and a destination, it automatically populates a bill. An incorrect prediction can easily be changed by the order-entry personnel. CABE went live in 2006 at the company's Roadway subsidiary, with immediate benefits, says Rapken, adding that the company is now deploying the system in other divisions as well.

The CABE deployment was made easier, and the ROI even greater than it might have been, because YRC had earlier deployed an image-scanning and content management system called OnBase, developed by Hyland Software. As a result, paper invoices, of which

Business process management licenses, services and maintenance revenue for software vendors will grow from **\$1.6 billion** in 2006 to **\$6.3 billion** by 2011.

SOURCE: Forrester Research

there were many, were quickly loaded into the system, and even more important, all order-related documents could be tracked and managed.

Baseline productivity for the order-entry personnel quickly increased by nearly 50 percent. A year later, some team members have upped their hourly production another 130 percent. Errors have dropped as well, and that means receivables are collected that much faster.

Lessons learned? There are two, says Rapken. Be sure that business management and IT are closely aligned before you undertake a BPM project. And giving a nod to the company's venerable mainframes, he adds: "Not everything has to be done with new technology. Sometimes it makes sense to teach an old system new tricks." **CIO**

Bill Snyder is a freelance writer based in California. To comment on this article, please go to www.cio.com/article/448961.

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Investing for the LONG HAUL

Railroads are poised for a comeback, thanks to rising fuel prices. IT provides the linchpin for a shipping model that integrates ships, trucks and trains. BY STEPHANIE OVERBY

Reader ROI

- :: The rise of intermodal transportation
- :: How IT improves railroad efficiency and service
- :: The limits of technology investment

THERE'S SOMETHING NOSTALGIC ABOUT RAILROADS. The steel tracks that rim the American landscape. The familiar ding-ding-ding as the crossing arm descends and the freight train passes. The lyrics to "I've Been Working on the Railroad," learned from childhood. The \$200 properties on a Monopoly board.

To the layperson, little has changed over the years. Those rust-colored tracks lie fixed in their familiar locations. Drivers sit at a railroad crossing, either cursing their luck or counting cars for fun, the way they always have. Kids still learn the old folk song. And the B&O is a downright bargain for today's Monopoly players.

Even executives in the railroad industry recognize that, in some fundamental ways, freight railroads are untouched by time. "It's still steel wheel on steel rail," says Deb Butler, CIO and executive vice president of planning for Norfolk Southern, a company that's 177 years old.

But a funny thing has happened. As the price of diesel fuel soared and highway congestion increased, new interest sprang up in the old form of transportation. "Shippers had been dubious about rail because it has historically been about moving very large finished goods or commodities in bulk," says David Rutchik, partner with sourcing and supply chain consultancy Pace Harmon.

As big retailers, manufacturers and even trucking companies themselves started scrutinizing their skyrocketing shipping costs, however, railroads began to look more attractive. "It's all about the economic pressure," says Rutchik. Sustainability, too. That old iron horse, chugging along at 49 miles an hour, has suddenly become a "green" option, given its ability to move a ton of freight 423

A woman with short, reddish-brown hair, wearing a dark, long-sleeved suit jacket over a white collared shirt, stands with her hands on her hips. She is positioned in front of a large, disorganized pile of dark, weathered railroad ties. The background is a clear, light blue sky. The ground in the foreground is covered with gravel and some wooden debris.

IT helps BNSF move
containers between
trucks and trains faster,
improving service to
trucking companies and
helping recover more
quickly when trains
are delayed, says CIO
Jo-ann Olsovsky.



The key to increasing railroad capacity "is using information and technology," says **Deb Butler**, CIO with Norfolk Southern.

miles on one gallon of gas.

While it's still only carload materials like coal that make a full cross-country trip by locomotive, more and smaller goods are spending the bulk of their journeys on a freight train. In 2004, intermodal business—the transport of truck trailers or ship containers on a railroad's flat cars—surpassed coal as the largest source of revenue for Class 1 railroads (as categorized by revenue) in the United States, according to the Association of American Railroads (AAR). "It has been our engine of growth," says Tom White, director of editorial services for AAR, thanks to big customers like UPS, truckload carriers like Schneider National and J.B. Hunt, and—to a lesser degree—the less-than-truckload transportation providers, all eager to use their trucks and drivers for short trips and let the railroads handle the rest.

The increased demand has been good news for railroads in the short term. But

long-term, experts say, demand for rail service could outstrip supply to such an extent that rail capacity becomes severely strained and rail shippers profoundly dissatisfied. The key to future growth and customer satisfaction—in addition to laying billions of dollars' worth of new track—will be new IT systems and technology-enabled business processes, which ensure that the railroads operate more efficiently and predictably.

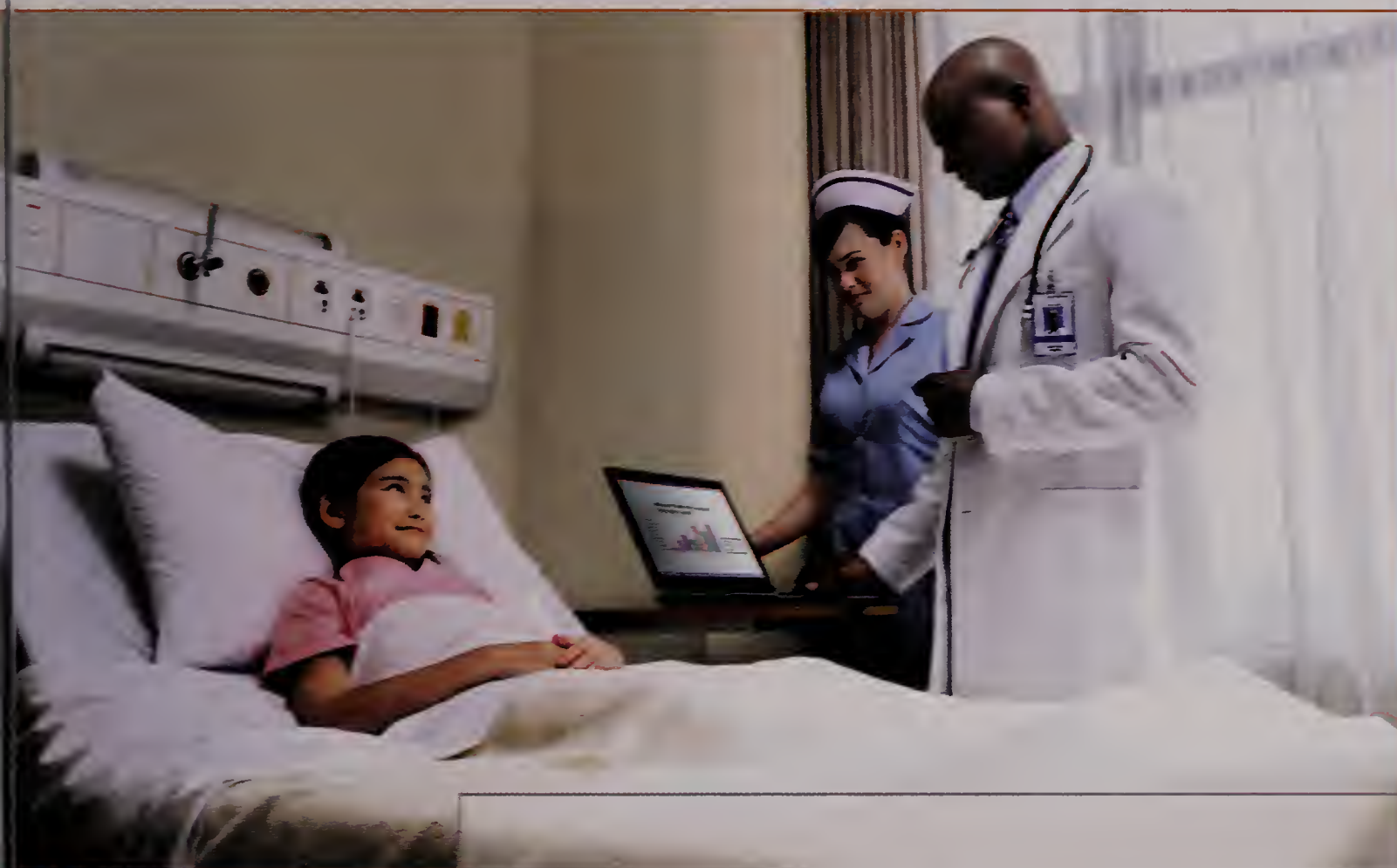
Rail carriers, anxious to take advantage of growing interest in their intermodal offerings, are investing in systems to become more flexible, improve on-time performance and increase their virtual capacity. Automated gate systems reduce backups at intermodal hubs, while complex trip-planning systems analyze variables, such as crew and locomotive availability and the weather, in order to reduce bottlenecks on the tracks. The railroads are also updating their tracking

systems to provide trailer-level location data and more frequent updates to satisfy a new breed of end customer. Wal-Mart or Kimberly-Clark, for example, wouldn't be satisfied just to know that the train left Seattle on Sunday and is supposed to get to Kansas City on Wednesday.

"The key to growth, service levels and getting the most capacity out of the railroad is using information and technology," says Butler. The question waiting around the bend is whether that will be enough.

RAILROAD'S NEW GROWTH ENGINE

The use of wooden railways to move goods and people, by some accounts, goes back to ancient times. But it wasn't until the late 1700s that metal was used for the wheels and track. Steam replaced horses for powering locomotives a few decades later. And in 1815, Colonel John Stevens



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was granted the first railroad charter in North America.

The railroads dominated long-haul freight transport nearly until Dwight D. Eisenhower established the Interstate Highway System in 1956. Shippers found that finished goods could get more places faster and more flexibly on the open road. Railroads chugged along, nevertheless, carrying coal, lumber and other commodities. That movement of bulk goods remains an important component of railroad revenue. "[Those customers] need only limited visibility into their shipments and transit times and are able to deal with the inherent dynamics of the infrastructure, which is that the railroad doesn't always take the shortest distance between two points," says Marc Tanowitz, principal with Pace Harmon.

But in the past couple of decades, the railroad industry has experienced two big shifts. One has been consolidation. In 1980, there were 40 Class 1 railroads (defined today as those with operating revenue exceeding \$346.8 million in 2006) operating in the United States. Today there are just seven: Burlington Northern & Santa Fe Railway (BNSF), Canadian National Railway, Canadian Pacific Railway, CSX Transportation, Kansas City Southern Railway, Norfolk Southern Railway and Union Pacific Railroad.

The other change has been the explosive growth of its intermodal business. Intermodal volume has grown 400 percent since 1980, according to AAR, from 3 million units (trailers or containers) to 12 million. Today, chances are much of the stuff of your everyday life—your cell phone, your cereal, your car—rode the rails at some point on its way to your door.

BNSF (the product of more than 390 railroad lines that merged over 150 years) still hauls enough coal to generate 10 percent of all electricity in the United States and moves more grain than any other North American railroad. But it's also one of the world's top movers of intermodal traffic. Half of BNSF's volume and 33 percent of its revenue comes from moving truck trailers and ship containers. That's probably because BNSF owns the shortest

route between Southern California ports and Chicago distribution centers. (More railways come together in Chicago than in any other city; according to some estimates, more than 75 percent of U.S. rail freight from U.S. ports is processed there for distribution throughout the country.) BNSF CIO Jo-ann Olsovsky says her company has forged partnerships with trucking companies for 25 years.

There's a natural synergy between full-truckload carriers and rail because the trailer is headed to and from a single location. One intermodal train can move as much freight as 280 trucks. (For more on how the railroads are using IT for fuel optimization, read "Using Less Diesel," above.) That's why intermodal shipments accounted for one-third of truckload carrier Schneider National's \$3.7 billion in

Using Less Diesel

Fuel-optimization systems help engineers operate trains more efficiently

ALTHOUGH RAILROADS ARE THE MOST fuel-efficient form of surface transportation, they're hurt by rising diesel prices. Fuel costs at Burlington Northern Santa Fe (BNSF) have risen from \$1 billion in 2003 to \$1 billion per quarter in 2008. And that means bigger fuel surcharges for customers. (Railroad and trucking companies have been sued by their customers for allegedly colluding to fix fuel surcharges, a charge companies in the transportation industry deny.)

Investing in more fuel-efficient locomotives helps curb diesel costs, but that goes only so far. So rail carriers, just like their diesel-devouring brethren in the trucking industry, employ fuel-optimization systems to control costs.

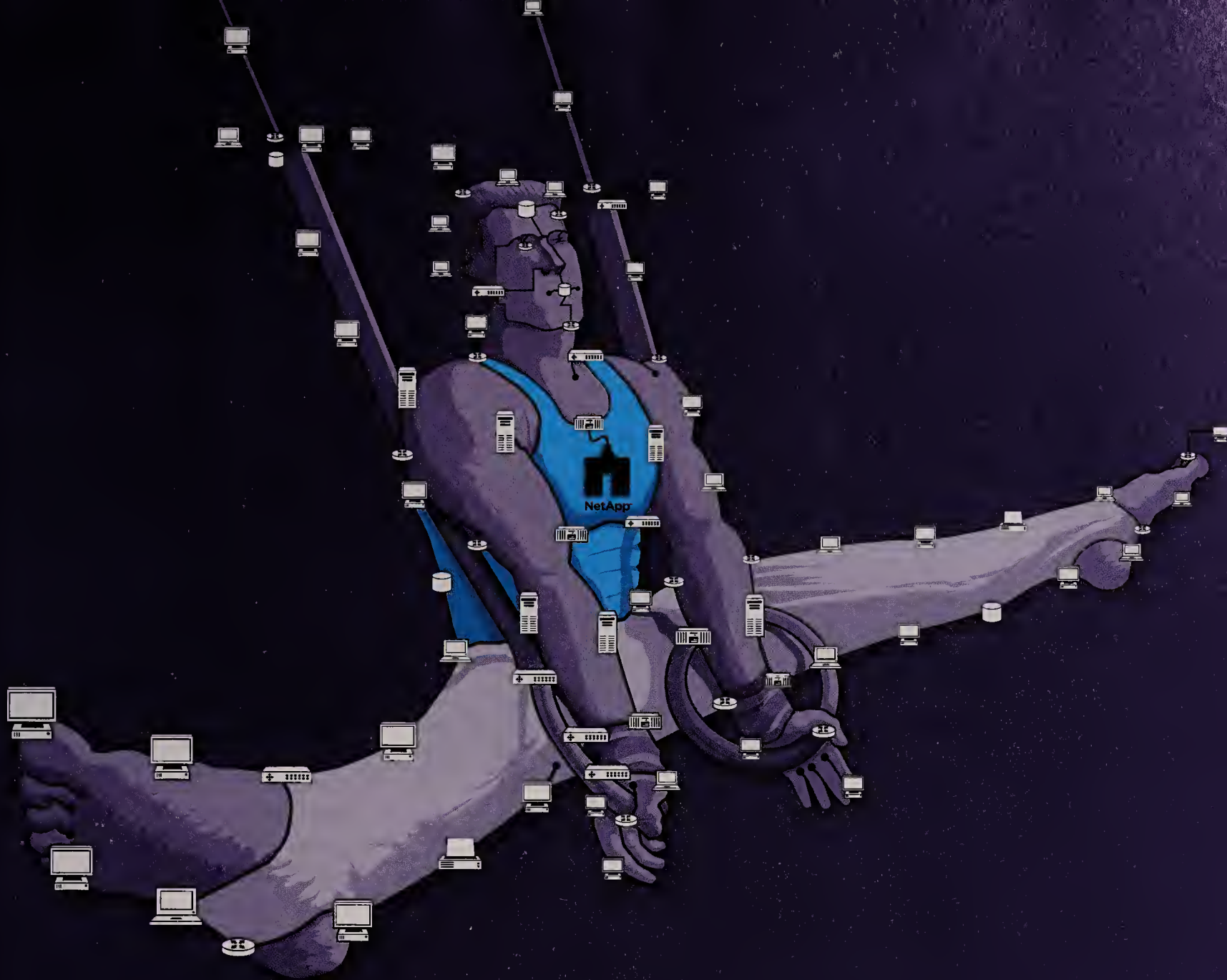
In 2006, Norfolk Southern began installing its Locomotive Engineer Assist Display and Event Recorder (Leader) on its entire fleet. Developed in partnership with New York Air Brake, the system calculates the optimum speed at which to operate the train, depending on the topography and curvature of the track, the train's length and weight and other conditions. "It's rare in our territory that you're operating a train over a straight path," says Deb Butler, Norfolk Southern's executive vice president for planning and CIO.

The system has been integrated into Norfolk Southern's Optimized Train Control system, developed in-house, which utilizes data communications, positioning systems and onboard computers tied to a train's braking systems to enforce speed and operating limits automatically.

Last year, BNSF rolled out its Fuel MVP Program to encourage engineers to use fuel-efficient train-handling practices. The company had a scorecard to track each engineer's performance, but IT automated the process using the railroad's network of 37 wireless base stations. The base stations gather information from passing trains' onboard computers and then transfer it to BNSF's enterprise data warehouse. After normalizing the data for mitigating factors (Was the train going uphill? Were the cars empty?) BNSF calculates each run's fuel efficiency and displays the information online.

Each month, the company ranks engineers based on fuel conservation and rewards leading engineers. Thanks to fuel-efficiency programs like Fuel MVP and the acquisition of more efficient locomotives, BNSF's fuel efficiency increased 8.3 percent between 1996 and 2006. In 2007, the company's fuel efficiency further improved by nearly 3 percent.

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revenue last year. Steve Van Kirk, vice president of intermodal commercial management with Schneider, says the business it gives its two biggest rail partners, BNSF and CSX, will grow "due to driver shortages, rising fuel costs and growing sensitivity to the impact of different choices on the environment."

The intermodal option gives truckload carriers opportunities to cut costs and provide additional solutions for customers, Van Kirk says. "We're in it for the long haul, and we see it increasing in some places it was never used before," he says, noting that Schneider plans to increase its rail buy in the shorter-haul Eastern triangle connecting Chicago to Florida and the East Coast ports. "As fuel costs have gone up, rail is a more viable alternative for 800-mile or less trips."

Even less-than-truckload (LTL) carriers with their trailers of mixed goods headed for different destinations have been eager to take advantage of rail service. "We don't want to have to jack up prices because diesel is at \$4.60 a gallon," explains Michael Rapken, CIO for YRC Worldwide. "And with a tight economy and our best customers leaning on us for more concessions, it makes our ability to generate a margin on that business tougher and tougher. We use rail as much as possible," he says, though YRC considers cost and capacity in its calculations. (For more about YRC, see "BPM Without Busting the Budget," Page 23).

Doing so is possible thanks to improved rail service reliability in certain corridors. "Certain high-density (rail) lanes have results close or equal to long haul trucking," Van Kirk says. A trucker doing 500-miles-a-day solos takes four days to get from Chicago to Los Angeles. An intermodal train can usually make the trip in four or five days. Whether to ship by road or rail comes down to how Schneider's network matches up with the available rail networks and what the end customer's expectations are. "If you're talking about something going from Chicago to L.A., it works," Van Kirk says.

The railroads want to expand intermodal capacity in high-demand areas.

IT can help the railroads more efficiently route trains and process freight at intermodal terminals, enabling them to increase capacity virtually without spending as much to lay track.

Intermodal has been the fastest-growing segment of Norfolk Southern's business during the last five years, accounting for 20 percent of its \$9.4 billion in revenues last year. "We have initiatives under way to create corridors that are natural magnets for trailer and container traffic," says Butler.

CREATING VIRTUAL CAPACITY

The industry has finally run out of excess capacity, enabling rail lines to raise their prices 30 percent or more, according to Morgan Stanley research analysts William J. Greene and Adam Longson. But the railroads must make significant investments in capacity and service to take advantage of the situation long-term. (Potentially, railroads could take business away from trucking companies.)

The U.S. Department of Transportation has forecast that freight railroad demand will increase 88 percent by 2035. If capacity is not added, as much as a third of the country's 140,000 miles of track will be so congested as to cause widespread service breakdowns. The DoT report concluded that \$148 billion must be invested in railroad infrastructure expansion.

Here's where IT comes in. Although the Class 1 railroads, including BNSF, CSX and Norfolk Southern, are actively investing in physical infrastructure—laying new track, building new terminals and expanding flatcar capacity—the average railroad spends nearly 80 percent of its capital expenditure budget just maintaining the track it already has. A rail company spends 17 percent of revenue on capital investment, compared with 3 percent for the average manufacturer. The

AAR's White says proposed investment leaves a gap of \$1.4 billion a year beyond what the rail carriers will be able to raise on Wall Street, according to a study for AAR by Cambridge Systematics.

One solution is proposed legislation. The Freight Rail Infrastructure Capacity Expansion Act of 2007 would allow up to a 25 percent tax credit for rail investments. But AAR's White says the bill isn't moving quickly. Railroad investment in equipment, like new signaling and communication systems to decrease the spacing between trains or more powerful locomotives that can run heavier, longer trains, will help, too. But IT can help the railroads more efficiently route trains and process freight at intermodal terminals, enabling them to increase capacity virtually without spending as much to lay track.

"The entire industry is putting more focus on IT systems as a way to streamline operations," says Morgan Stanley's Longson. When a train is moving down the track, there's little work for anyone but the conductor. But when it pulls into the station, there's a flurry of activity that can be more efficiently managed with IT.

BUILDING FOR WHAT'S AROUND THE BEND

One of the rules of railroading has always been, "You are where you go." A railway's value proposition has always been tied up in where it has chosen to lay track. But today around BNSF's Fort Worth headquarters, you'll more likely hear the phrase "building for where we need to be."

The company is expanding its intermodal hubs and laying additional track. It is also spending about a third of its IT

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budget on new investments. Some of that investment goes into software for improving what BNSF calls overall “velocity.” A movement planner from Siemens, for example, schedules trains throughout the BNSF network, benefiting carload and intermodal customers.

Likewise, Norfolk Southern’s Thoroughbred Yard Enterprise System (TYES) tracks the movement of railcars and locomotives. Norfolk Southern employees use the Operating Plan Developer (OPD) to model railcars into blocks, blocks into trains, trains into schedules. Additional models predict locomotive and crew requirements for the train schedules.

But the railroads have begun to make specific IT investments for their intermodal business.

Consider BNSF’s Hobart Yard in Los Angeles, which processes 1.2 million lifts (the movement of a “box”—one container or trailer—to or from a railroad car) a year, or Logistics Park, Corwith and Cicero facilities in the Chicago area executing more than 2 million lifts annually. Managing these transfers requires technology to schedule movements efficiently and keep shippers and receivers informed of the boxes’ whereabouts. Hundreds of trailers and containers must be transferred on and off trains.

Both BNSF and Norfolk Southern are implementing automated gate systems at their intermodal terminals to help the trailers descending on those facilities make their trains. Norfolk Southern is also using the gate systems to improve safety, reduce gate processing time and reduce the time drivers spend inside the terminal. “That helps our trucks coming onto the railroad property drive through without delays, which improves our productivity,” Schneider’s Van Kirk says.

The systems use optical character recognition, digital cameras and voice-over-IP-enabled communication kiosks. They

scan the trailers for identifying information and send them to the right location for transfer, transforming a system that previously required people with ruggedized computers to spend 20 minutes processing each idling semi into one where truckers can drive through in three minutes.

In an industry where a day without a workplace injury is rare, the gate systems also reduce the chance of someone being run over by an 18-wheeler, says Kathleen Meisinger, BNSF’s director of technology services and application development. Jerri Parks, director of intermodal and automotive systems for Norfolk Southern, says her company plans to use the system to process trucks remotely in and out of

terminals in the near future.

Containers on an ocean vessel are often stacked 10 high, and managing them is relatively simple: first on, last off. But because of the complexity of transfers at the intermodal station, railcars often carry just one container, even though a locomotive can move double-stacked containers. BNSF has invested in giant cranes—284 feet wide, spanning seven loading tracks and three truck lanes—to load double-stacked cars. They worked with Kone, a Finnish marine software vendor, to develop workflow optimization software that uses GPS coordinates of containers and incoming trains to automatically guide the crane operator. Norfolk Southern’s Strategic Intermodal Management System (SIMS) creates a load plan for moving trailers and containers onto a train at the intermodal station, so that they can be efficiently unloaded at their destinations. SIMS also supports train planning, inventory management,



Steve Van Kirk, vice president of intermodal commercial management with Schneider National, exchanges shipping data with railroads using EDI.

Tracking Trailers

Learn more about the technology Schneider National uses to track its trailers on trains in **KEEP ON TRACKIN'** at www.cio.com/article/118959.

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equipment storage and EDI communication with customers and other railroads.

CSX—whose lineage can be traced back to the very first U.S. railroad, the Baltimore & Ohio—has built a wireless tool that allows truckers to verify billing with the terminal before arrival. The smartphone-enabled application lets drivers know whether they will be able to offload the trailer without any issues, says Frank Lonegro, president of CSX Technology, the business unit responsible for IT. The driver can reconcile problems by phone en route, saving time and money.

Those systems that improve productivity will only become more important as East Coast carriers like CSX and Norfolk Southern go after the short-haul market, where trucks continue to dominate. Norfolk Southern is moving more freight in the 500-mile and 250-mile lanes, like the route from the Port of Savannah, Ga., to Atlanta. “We want to continue to grow

But more visibility into container movement and progress is necessary to meet the real-time data needs of intermodal customers. And the increased number of touchpoints involved in intermodal freight movement—versus single trips by one mode of transport—means that more data is being generated.

For truckload carriers, “it’s no longer pick it up, drive it, deliver it—one driver, one assignment,” explains Schneider National’s Van Kirk. “There’s the arrival dray, the rail component and the destination dray, and each movement has three separate activities.”

The big railroads currently use electronic data interchange (EDI) to share information directly between their systems and those of their intermodal partners. “When one of our drivers picks up a load, we have a satellite system in the truck that sends a macro to say they picked up the load and to generate a way-

per’s own system. “It’s one thing to know your trailer departed Atlanta and the next stop is Birmingham,” says CIO Butler. “It’s another thing altogether to know where between those two points it actually is.”

Real-time tracking information from Class 1 railroads has improved over the last few years, says Dave Howland, vice president of intermodal rail management for Schneider National. There is “better reporting of trains delayed between reporting points due to derailment, washout, et cetera, on a real-time basis,” Howland explains. “Before, they wouldn’t update those things until the train reached the next reporting station, a day or two after the fact.”

If the railroads want to grow their LTL business, they must invest more in streamlining business processes and communications, says Tanowitz. They also need to keep better track of their own assets. Tanowitz says 1 percent to 2 percent of railcars show up as “in unknown locations” on railroad systems. Railroads won’t be making huge investments in IT systems like the barcode scanners that UPS uses. But, he says, they could invest more in GPS tracking of railcars and integrate that with their existing networks to keep closer track of trailers and containers than they do with the AEI tags and readers.

To help trucking companies manage their trailers, CSX has developed an IT-enabled empty-equipment-relocation program. It allows carriers that have unloaded a trailer at an intermodal station in an area where they’re unlikely to pick up another load to, for a fee, put the empty container on a train to a destination where there’s greater opportunity to load up again. “It allows carriers to have better driver utilization in their hot markets,” says CSX’s Lonegro.

But not every customer is thrilled with the rail offering as it exists today. In the early days of intermodal, the railroads wooed customers with free rides for empty trailers to someplace they could load up again. Not today. “The problem is, they haven’t added a lot of rail capacity in the last hundred years, and the service isn’t as good as it used to be,” says YRC

Shippers of small-volume, high-value finished goods want “package-level details on their shipments,” and railroads today can’t provide that.

—MARC TANOWITZ, PRINCIPAL, PACE HARMON

this business,” says Jim Bolander, assistant vice president, intermodal pricing and development for Norfolk Southern.

BETTER DATA FOR CUSTOMERS

New IT systems aren’t limited to increasing operational efficiency, they’re also critical to improving customer service. It’s something few railroads had been known for in the past. Tools like the automated gate system at the intermodal hubs help. “When you’re moving millions of containers a year, saving 17 minutes on the in- and out-gate translates into improved service and improved recoverability [after delays],” says Olsovsky.

bill that lets the railroad know they have a load coming,” explains Van Kirk. “They go through an automated checkpoint (at the intermodal station), and the railroad provides EDI status updates for different events.” Most rail providers also provide the same data and the ability to generate reports via their websites, which trucking or retail customers can then use to update their end customers.

Norfolk Southern and other railroads have installed automatic equipment identification (AEI) tags and readers on their tracks at close intervals to monitor the movement of railcars. The AEI readers relay each railcar’s location. That data can be viewed online or sent to the ship-



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Worldwide's Rapken. "They don't reposition our empties anymore. They've raised their prices." While YRC understands the market dynamics guiding the railroad decisions and says it isn't moving away from rail, the company is moving more of its long-haul less-than-truckload trailers on 18 wheels rather than steel wheels.

The railroads will tell you they've simply decided to focus on their core competency of moving trains and are concentrating on volume. "Over the years, railroads have tended to focus more on providing transportation service and less on equipment management," says BNSF spokesman Patrick Hiatte.

THE LIMITS OF RAIL

Then, of course, there is the need for speed. In the railroad industry, there's a business metric everyone keeps their eyes on: delays. Everyone is trying to limit it—20 percent of Norfolk Southern's incentive compensation is based in part on a composite service metric that includes goals for train performance, connection performance and compliance with operations plans. But keeping the trains running on time is hard to do.

When there's a storm, an airplane can fly around it. If there's a wreck on Interstate 90, a semi can take a detour. If there's a mechanical failure or a mud slide or some other mishap on a track, the train stops. IT helps mitigate slowdowns. The Midwest floods this summer "made for a tough couple of weeks," says Schneider National's Van Kirk. Union Pacific rerouted its trains on BNSF tracks, but such cooperation between railroads is used only in emergencies. Most of the time, railroads can't reroute trains on the fly.

The rail providers themselves are the first to point out these shortcomings. The risk factors listed in their annual reports will mention that more flexible truck lines will continue to affect their ability to compete for deliveries of nonbulk, time-sensitive freight. Rail remains a no-go for those managing just-in-time inventories and operations.

"A growing segment of the logistics marketplace is small-volume, high-value finished goods," says Tanowitz. Shippers of those goods want "package-level details

on their shipments," and railroads today can't provide that. Those most likely to invest in systems to provide more granular data—and compete or integrate with more LTL carriers—are the East Coast railroads like CSX or Norfolk Southern that are going after more short-haul business. The railroads also need to provide more precise forecasts for train departures and arrivals, Tanowitz adds.

CSX Technology's Lonegro says that if retailers provide SKU-level details to their intermodal customer and the intermodal customer includes that information in its shipping instructions, the railroad could modify its systems to allow everyone to have full visibility. But others, like BNSF and Norfolk Southern, say it's just not worthwhile to offer that level of detail today. Says BNSF's Hiatte: "Our trucking-company or ocean-carrier customers know what's in a trailer or container, and our tracing systems provide the location of the trailer or container."

The IT projects in the Norfolk Southern pipeline are focused on increasing overall productivity and decreasing costs. These include a new dispatch and traffic-control system to improve scheduling, transit times and service, as well as the next generation of a tool to optimize railcar-trip planning and provide dynamic routing (to be rolled out during the next year).

The railroads would need to integrate even more with each other to improve the overall flow of the rail network, analysts say. Although the Class 1s have negotiated rights on each other's tracks, traveling on track they don't own can be more

"It's one thing to know your trailer departed Atlanta and the next stop is Birmingham. It's another thing altogether to know where between those two points it actually is."

—DEB BUTLER, CIO, NORFOLK SOUTHERN

costly. And for the most part, the railroads choose the lowest-cost—not shortest-distance—route, often to the detriment of their customers, says Tanowitz.

Some wonder whether the railroads want to improve their services to compete more directly with trucking companies. "Investment in a truly integrated intermodal supply chain has been a lot of talk but not a whole lot of investment," Rutchik says. "The question is whether this is an incremental change based on an exceptional spike in fuel prices or this is an area they're going to really invest in and become a more viable third-party logistics provider."

The numbers tell the story, counters Butler of Norfolk Southern. "If customers didn't see value in intermodal as it exists today, they wouldn't be using it," she says. "We have the capacity and it's lower cost. Rail doesn't move as fast, in general, as highway traffic, and we have a lot of work to do. But our expectation is for continued intermodal growth."

Although improved service and increased capacity may enable the railroads to take business away from the \$150 billion trucking industry, there's one thing everyone agrees on: Rail will never fully replace long-haul trucking. "You would have to increase (rail) capacity by far more than economically could be justified," says AAR's White. "But long-haul transportation may increasingly move more by rail, and it will continue to be the key to our growth." **CIO**

Stephanie Overby is a freelance writer based in Boston. To comment on this story, go to www.cio.com/article/448916.

"Enterprise-Proven" is the Prerequisite for Enterprise SaaS Portal Solutions

Cost-effectiveness, security, scalability, ease of use and legacy integration top requirements for next-generation business portals.

Information technology and business leaders have fully embraced the enterprise portal. That's according to a recent study by Framingham, Mass.-based IDG Research Services, which reveals that 70 percent of responding companies are currently using one or more enterprise portal solutions, with many planning expansions.

Such enthusiastic investments reflect an exciting evolution in portal technology. The traditional portal is transforming from internally focused, one-off applications into a platform for information integration and application consolidation—with one system that integrates an enterprise's .com, intranet and extranet.

With this evolution, CIOs are raising the bar and calling for a new class of portal solution. "CIOs are demanding what we call 'enterprise-proven' solutions, which reflect deep experience in large-scale deployments," says Sam Jankovich, Chief Executive Officer and President of EnterConnect Inc., a leading provider of enterprise business portals based in San Jose, Calif. "These are portal solutions that offer the cost-effectiveness, low risk and scalability that this study proves are must-have capabilities."

Business Needs Drive SaaS Portal Deployment

What's interesting is that as CIOs move toward next-generation portals, they're looking for a service delivery model that is in keeping with this evolution. That model is Software as a Service, or SaaS, with 31 percent of the responding companies currently using or considering the use of this burgeoning delivery model for enterprise portals.

SaaS is a software deployment model whereby an application is hosted as a service, eliminating the burden of installing and running applications across user devices. "SaaS makes enterprise portal implementations easier—that is, easier to deploy more quickly to more users, and easier for users to learn and then leverage more effectively," Jankovich says.

What's more, a SaaS delivery model for enterprise portals has widespread business appeal. Cost reduction is the number one driver of adoption, followed by more effective communication, improved customer satisfaction, increased productivity and enhanced security.

An overwhelming majority of respondents indicate that SaaS portals also free IT to focus on more strategic initiatives. "You don't have to be an IT professional to manage the portal, so it's the business folks that are keeping it up-to-date and driving productivity," reports Jankovich.

Enterprise-Proven: The Only Way to Go

Most compelling, however, the SaaS model has enterprise appeal, out-delivering other options on key issues like cost-effectiveness, low risk and scalability.

"What CIOs really need for successful implementations are business-ready, out-of-the-box portals that work in their environment while addressing those key issues," Jankovich observes. That is, enterprise-proven solutions.

So when evaluating SaaS enterprise portals, respondents rank a number of features as critical:

- 94 percent tout cost-effectiveness as a top priority.
- 91 percent say a secure solution is a critical consideration.
- 85 percent rank scalability as important.
- 83 percent point to ease-of-use benefits.
- 77 percent indicate that integration plays an instrumental role.

Bottom line: CIOs want an enterprise-proven SaaS portal solution. The information technology and business leaders that responded to this survey are demanding exactly that, and they're getting it from the vendors with enterprise depth and tried-and-true solutions to back them up.

Go to www.cio.com/whitepapers/enterconnect to obtain a free download of the complete research results with insightful commentary from key respondents.

70% of survey respondents say they are currently using one or more enterprise portal solutions.

Cost reduction is the number one driver of adoption.

"What CIOs really need for successful implementations are business-ready, out-of-the-box portals that work in their environment."

— Sam Jankovich, CEO, EnterConnect



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Mistakes That Cause SOA to

fail

Most SOA failures are about people and process, **not the technology.**

To achieve success, learn from these mistakes.

BY MIKE KAVIS

SOA is not something you buy, it is something you do. And research shows us that few companies are doing it well.

A recent Burton Group analysis of SOA implementations found a 50 percent failure rate among the 20 companies that it studied. The SOA efforts of another 30 percent were deemed “neither successful nor wholly failed.”

So what’s going on here? When Burton Group’s Vice President and Research Director Anne Thomas Manes spoke about this issue at the consulting firm’s Catalyst conference in June, she said most SOA failures are due to people and process, not the technology. Manes drove her point home with the comment, “You’re going to have to create some kind of culture shift.”

As a veteran chief architect with more than 23 years of IT experience, I totally agree with her assessment. I have worked on an SOA initiative for more than two years and during that time I found that the biggest road blocks were overcoming the

Reader ROI

How poor people management causes SOA to sputter

Why you need to manage change to achieve winning results

Lessons from the trenches

enormous amount of change in the way people need to look at business processes and the way software development needs to be approached. The technology was the easy part.

So now we know who to blame for failed SOA initiatives. It's the people, stupid. But just how do people make SOA fail? Let me count the ways. However, this is no blame game. By acknowledging the ways in which people can cause an SOA initiative to sputter, CIOs can take the opportunity to put a game plan together that addresses each issue and greatly improves an organization's chances of success.

1 Failure to Explain SOA's Business Value

ONE OF THE MOST COMMON MISTAKES I.T. people make is that they approach SOA purely from a technological perspec-

tive. They spend a great deal of time and effort on architecture, governance and vendor assessments (which is good), but they forget that SOA needs to solve real business problems (which is bad). So they invest huge amounts of time and money building out the architecture—only to find that when they are done, nobody in the business understands the benefits and they're not interested in the technology.

Recommendation: Start with real business problems first. This is why BPM (business process management) is the "killer app" for SOA. BPM improves and automates business processes. It provides visibility into operational performance, enhances agility by allowing the business to change its processes dynamically without IT involvement, eliminates waste—thus reducing costs—and much more. Show the business how SOA will help solve its problems. Then address the technology issues.

SOA Migration Takes Flight at United

How the airline managed people and technology to move its reservation system with Lufthansa to an updated architecture

In a mission-critical project like modernizing an airline's product suite for reservations, inventory and passenger check-in, technology is almost beside the point. Management is key.

"We're having a heart transplant," says Shama Patel, United Airlines managing director of corporate strategy and planning. Patel was discussing the Horizon Project, an SOA-fueled modernization effort by United and Lufthansa, at IBM's Smart SOA Conference in April.

Horizon is certainly a major operation. The existing system is 40 years old, built in assembly language and green-screen-based. The back end is no longer scalable for today's needs and it doesn't integrate well with anything, explains Patel. Coupled with customer demands for modern technology, it was time for a change.

Lufthansa and United partnered to develop Horizon, a common reservation platform to be used by both airlines and, eventually, other members of the Star Alliance, which consists of 21 other member carriers. When it rolls out, it will impact 20,000 people in 350 locations in a three-

to four-year time frame, and touch 20 company divisions at United alone.

Horizon initially focused on three major back-end functions: sales, planning and departure management. However, "as we worked on the back-end system, we realized we also had to replace the front end," Patel says. The new back end wouldn't be able to interact with the old front end; and as part of the new system architecture, it needed an abstraction layer in the middle. So Horizon grew to include the integrated agent portal, the corporate intranet, real-time systems for flight status and baggage systems, and much more.

To make such a project succeed means tackling people and business issues. "Managing change is essential to help people through the emotional curve," Patel says.

Horizon uses several change-management techniques to ensure project success. For instance, United business sponsors and IT leaders are aligned through a strong executive governance board. The company also established a guidance coalition. This is not a matrix

organization with business on one side and IT on the other, explains Patel. Participants make decisions for the division. So true alignment is a necessity. "There is always a divide [between IT and the business]; on a project like this, that just won't work," she says.

Patel also offers these suggestions:

Put risk in a framework. This is critical for long-term projects.

Determine the process architecture. This gives transparency to both business and IT. To create the SOA building blocks and map processes relevant to the project scope, Patel says the Horizon project had a LEGO party. Teams received tagged LEGO blocks and were asked to "build a reservation" in a controlled scenario. Everyone learned what each piece involved added to the process and the ways a "simple" transaction could be addressed by IT.

Create a business integration road map. Horizon's reflects dependencies from all business teams; a call center move or union negotiations can impact the software rollout schedule, after all.

—Esther Schindler

2 Underestimating the Impact of Organizational Change

AS WITH ANY TRANSFORMATIONAL INITIATIVE, resistance to change is a project killer. SOA brings massive amounts of change to an organization, especially if the organization does not have a well-established enterprise architecture in place. Fear of the unknown is the greatest contributor of resistance to change.

People need to understand WIIFM (What's in it for me?) and why changing their ways is good for them and the company. The challenge is that people at different levels within the organization are affected in different ways. Each level of the business has concerns that need to be addressed and that must be solved on an individual basis.

Recommendation: Create an organizational-change-management (OCM) plan. OCM plans clearly articulate what needs to be changed and why, what the steps are for creating the changes, and why these changes are necessary and good for both the company and the employee.

I would go one step further and hire an external OCM expert to help the leadership team of the SOA initiative deal with change. I am a big fan of Harvard's leadership and change-management guru, John Kotter, and his eight-step change model, which outlines a step-by-step process on how to implement change initiatives within an organization.

3 Lack of Strong Executive Sponsorship

IT IS HIGHLY UNLIKELY that your SOA initiative will accomplish its goals without sponsorship from the top. SOA spans multiple departments, multiple systems and is a major undertaking. You need a strong executive with clout to keep the initiative moving forward and to break down barriers along the way. But clout by itself is not enough. This person also needs to have enough time to focus on the SOA initiative to keep the sense of urgency high.

Recommendation: If your SOA initiative is aligned with key business drivers, the executive sponsor should be a high-ranking businessperson who benefits substantially from the implementation. Let the business own and drive the portfolio of projects that drive the SOA road map. But no matter who you chose, that person must be able to move mountains and possess a proven track record of successful leadership.

4 Attempting to Do SOA On the Cheap

SOME COMPANIES ATTEMPT SOA with limited budgets. Bad idea. In addition to all of the middleware that is required, there are huge investments in governance tools, training, consulting, infrastructure and security.

Managing SOA in a production environment is challenging because of its distributed and loosely coupled nature. Don't skimp on the lifecycle management tools or troubleshooting

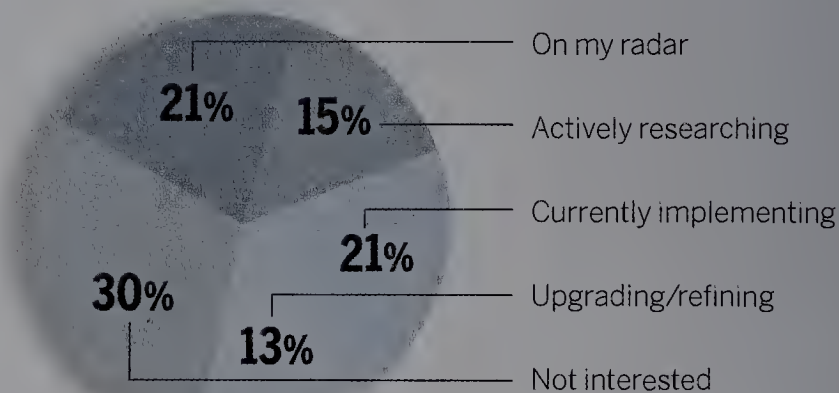
will be like trying to find a needle in a haystack. Some companies will try to take on SOA projects without any outside help to shave off the high cost of consultants. Unless you are loaded with staff experienced in SOA, trying this without outside help in order to save money can be a recipe for disaster.

Recommendation: Create an SOA road map with a portfolio of projects and a vision of the long-term benefits that SOA will bring to the company. Create the financial justification for the entire SOA initiative and show the ROI or whatever the most important financial indicators are for the company. If you build a good business case, there should be money to fund the initiative.

Also, several great open-source products are available that can greatly reduce the overall costs of your SOA implementa-

Gaining Traction

Nearly 60 percent of CIOs say they are undertaking or exploring SOA/enterprise architecture initiatives.



CIO RESEARCH

tion. MuleSource, WSO2 and Red Hat have a suite of tools for development, service lifecycle management and integration. Push2Test has a good open-source solution for SOA testing, and CentraSite provides a registry and repository solution.

5 No SOA Skills on Staff

THERE ARE MANY SPECIALIZED roles and skill sets required to do SOA that likely do not exist within the organization. You'll need SOA architects, business-process modelers, administrators of the tools within the stack, data architects and those with many other skills. Talent to fill these positions does not come cheap.

Trying to implement SOA without any SOA experience on staff is a major mistake. SOA affects all IT departments, including testing, infrastructure and security. This is much more complex than sending a few developers to a few training classes. Don't forget the business, either. The business needs training on pro-



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cess improvement and possibly even on the BPM tools as well.

Recommendation: Develop an extensive training and resource plan, and include it as part of the initial request for funds when delivering the business case for SOA. Try to reduce the number of times you need to ask for money and get as much as you can up front. Otherwise, management may view the SOA initiative as an endless drain on capital.

6 Poor Project Management

AT THE END OF THE DAY, it still boils down to a company's ability to manage projects. Project managers must oversee scope, mitigate risks, keep everyone on schedule and provide the proper communications to people at all levels. Requirements-gathering is critical and analysis paralysis must be avoided. If your organization struggles to deliver normal projects, your chances of success with SOA will be twice as challenging.

Recommendation: Pull in your best project management resource(s). Or go out and hire a rock star or two to help lead this initiative. Whoever you chose should have a track record for delivering huge, transformational initiatives. To make matters even more challenging, this person needs to be technical enough to understand SOA from a conceptual level.

7 Viewing SOA as a Project Instead of an Architecture

MANY COMPANIES ARE NAIVE and think that implementing SOA is just another project. SOA is a software architecture and achieves desired benefits only when a company adheres to the core principals of service orientation and ensures that deliverables are consistent with the architectural vision and road map. SOA requires specialization. A business service may be built through the efforts of an SOA architect, a developer, a data architect, a network architect and a security specialist. Gone are the days where one person wears all the hats.

There is also specialization within the layers of the stack. You have user interface designers, business process models, data services experts, business rules specialists, ESB experts, etc. All these specialists may be working on the same services concurrently, which requires high levels of collaboration.

Recommendation: The standard IT team structure is not

SOA Pays Off for Synovus

Governance is key to making project goals work

What does it take to achieve a successful SOA implementation? Ask Synovus Financial, a provider of investment services, commercial and retail banking to 35 banks in the southeastern U.S. Synovus is the winner of a service-oriented architecture (SOA) case study competition sponsored by the SOA Consortium and CIO. The competition highlights business success stories and lessons learned from organizations pursuing SOA adoption.

Synovus's Emerging Business Opportunities partnered with NACHA-The Electronic Payments Association and eWise, a financial software provider, to create a consumer secure vault payment (SVP) platform for a new Automated Clearing House payment program. The project reduces consumer identity fraud risks; it also gives merchants guaranteed payment from a consumer's financial institution at a lower cost than credit card processing fees.

A key challenge was to pass information securely between various partners using only Internet technologies. Synovus had to avoid complexity and keep the solution affordable, since merchants and financial institutions had to adopt it quickly and integrate it with their IT systems. The business team engaged IT early in the discovery process. IT selected SOA because of its industry-standards-based integration approach. Synovus could also leverage its existing SOA infrastructure. Project organizers judged that the cost and effort from a Synovus IT Web service standpoint was 65 percent cheaper than a project from scratch. Each company involved has or is adopting an SOA infrastructure.

This was a huge project. In the process of creating its winning solution, the company learned—sometimes the hard way—how important governance is for reaching SOA project goals. They treated SOA as an architecture and philosophy, not a technology. "You don't have to get all of the things right on the first implementation," wrote David Mize, Synovus director of architecture and development. "But you do have to get your architecture correct."

"Synovus SVP exemplifies the business potential of SOA, industry participants joining forces to deliver new revenue-generating services," says Brenda Michelson, the SOA Consortium's program director.

For more about Synovus's solution, see the CIO.com SOA Drilldown at www.cio.com/soa.

—Esther Schindler

effective for SOA. Think outside the box. I prefer a matrix organization and a collaborative war-room environment. Tear down the cubes and set up an open space to allow for these specialists to work closely together. It also helps to have the business and testers in the room. Put up whiteboards everywhere. Eliminate as many scheduled meetings as possible and choose more collaborative techniques instead.

8 Underestimating SOA's Complexity

YOU DON'T KNOW what you don't know. Conceptually, SOA is simply the next evolution of what IT has been building over the years. It is not a hard concept to understand, but it is hard to implement correctly. The beauty of SOA and BPM is the simplicity it brings to the end users by integrating various back-

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end systems so they look like one composite application to the user. The downside to SOA is that this greatly increases the complexity of building and managing software.

Building SOA is a software engineering exercise. This is not drag-and-drop development effort, and many developers will struggle to make the transition. SOA requires adherence to standards and best practices and needs talented individuals who understand complex concepts to be able to deliver.

There is so much to do to implement SOA that often security is an afterthought. It is critical that security requirements are gathered early so that the underlying architecture supports security from its inception. Otherwise, it is highly likely that major changes in architecture will need to occur if security is addressed later on.

Recommendation: No matter how conservative you are, expect to run into various technical roadblocks along the way. Build in time as you will run into various integration issues—some caused by your code and some caused by the tools themselves. The vendor products are all far from being mature, and there will be issues. Set realistic expectations and don't try to take on too much too soon. Start small, deliver value often and build on it. Build security in from the inception; don't let it be an afterthought.

9 Failure to Implement and Adhere to SOA Governance

GOVERNANCE IS A DIRTY WORD to many people. Anything that sounds remotely close to government can't be good, right? Wrong! Call it SOA management and maybe people won't shiver as much.

Regardless, to achieve the benefits of SOA (reuse, flexibility, agility), the team must adhere to the architectural guidelines that the company adopts. This is what is called design-time governance. Without design-time governance you will likely wind up with JABOWS (just a bunch of Web services). If that occurs, you can throw the ROI out the window because you wind up building everything from scratch each time.

When done right, SOA becomes more cost-effective over time. Eventually, the development effort will shift from building services to consuming services. Senior Analyst and Principal Jason Bloomberg of ZapThink, an SOA advisory firm, calls this the tipping point: when the SOA starts reaping the benefits of agility and flexibility.

Then there is run-time governance. This is where you proactively manage the health of your production SOA environment. Run-time governance allows you to see what services are being consumed, and to enforce

The standard IT team structure is not effective for SOA. Think outside the box.

policies and SLAs (service-level agreements), troubleshoot, analyze performance and manage all assets. Don't think that once you deploy that you are done. Managing a distributed environment is not a task to be taken lightly.

Recommendation: Treat governance as a fully funded initiative that runs alongside your SOA implementation. There should be a dedicated team (which usually lives within enterprise architecture) with its own road map and long-term vision.

Don't try to implement governance overnight. This is a journey; it will take several years to reach a high level of maturity. As your governance matures, so does your SOA. Invest in a registry, repository and service-management tools. You also need new testing tools to test governance.

10 Letting the Vendors Drive the Architecture

RELYING TOO MUCH ON VENDORS can be perilous. The vendors' goal is to sell you as much stuff as possible. Your goal is to implement SOA successfully and to provide your company with maximum benefits at minimal cost. Do you see the conflict of interest?

Also, the vendors promise flawless integration if you purchase all of your tools within their stack. The reality is, they have purchased so many products from other companies that their stacks do not deliver any better integration than if you bought the tools from a variety of vendors.

Recommendation: Figure out what you need before you talk to the vendors. Perform a very thorough vendor evaluation process. When you narrow it down to a few candidates, have them come onsite to perform a proof of concept for which you provide the requirements. Watch them execute it before your very own eyes. This is where the vendors can no longer hide behind pretty PowerPoint slides.

Do your own homework. Read blogs from practitioners, talk to consulting firms that use the tools, talk to other companies that have implemented SOA and talk to vendor references. Do not take any short cuts; you will have to live with the decisions you make. **CIO**

Spotlight on SOA

To read the latest news and case studies, visit the **SOA DRILLDOWN** at www.cio.com/soa.

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Mike Kavis is a freelance writer, consultant and a veteran chief architect with more than two decades of IT experience. To comment on this article, go to www.cio.com/article/438413.

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Power from Your People

The CIO of Johnson & Johnson Pharmaceutical Research & Development finds competitive advantage in mentoring employees

Developing people is part of my job. To me, part of our responsibility as executives is to ensure that a pipeline of diverse capabilities exists—and not just in our own departments.

Many CIOs get tunnel vision when it comes to developing their staffs. They may only focus on developing one area at a time, such as technology, project management or business relationship management skills. But it's wrong

to go after one competency; the skill sets of employees becomes lopsided. You need a balanced organization that reflects people's different strengths and covers all your bases.

Because I'm nuts about employee development, I've raised the bar for my peers; others can see how I work with employees. Some of my peers come to me for mentoring and coaching advice. As a result, my colleagues' attitude toward me has changed over the years. They look to me as a leader in helping drive employees to fulfill their managers' expectations.

I have demonstrated my involvement in companywide employee development. For example, I help champion board-level sponsorship for some of our diversity groups, such as our Hispanic leadership development organization and a group for women's leadership. Because I'm visible as a mentor, I get

calls from people ranging from college graduates just entering the company to VPs within and outside of IT who want to discuss their futures or run an idea by me.

Since IT has become ubiquitous within the business, developing employees across the organization should be a strong competency for the CIO. The more people know about IT and how their jobs relate to IT, the better the company will be. Becoming a champion of corporate employee development starts with your IT team. Here's how we set an example for developing staff for the benefit of the entire company.

A Team Effort

You can't help everyone on your staff meet their career goals by yourself. I hold my direct reports accountable for developing the employees under

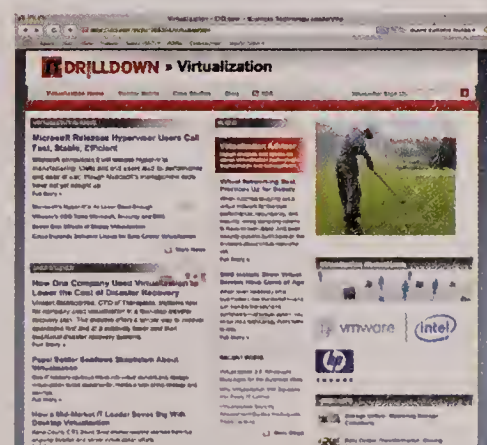


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them. At least twice a year, my leadership team and I talk about every employee and we all contribute to the conversation about individuals' strengths, weaknesses and growth potential. Then we set goals for each of them and determine how much help they need to achieve them.

We don't just talk about what people need, but also how they are going to get it. Other places may focus on the "what" but not the "how," which is a key element to our conversations. It puts the managers on the spot because they have to come up with the solution right then and there.

My managers and I give employees regular feedback on their progress. A lot of times, managers focus on organizational development once a year and choose performance reviews as that time. But if you compare employee feedback to having quality and process control, you can see why feedback needs to be frequent. You don't wait until your product is finished to test it. If you wait until the end and the product is bad, you have spent time, money, resources and raw materials only to be left with wasted inventory.

When we give constant feedback to employees, they're more likely to be able to act on it than they would be if you wait six months to tell them. Being busy shouldn't be an acceptable excuse for skimping on feedback, because focusing on employees should be a priority. You can be quick and to the point—a voice mail or an e-mail often does the trick. That tiny amount of time has huge ROI in the loyalty, growth and development of people who will deliver more for the company.

How Leaders Build Strong Teams

Read **TIPS FOR MANAGING AND DEVELOPING YOUR STAFF** at www.cio.com/article/31184.

CIO.com

To ensure I make the time, I commit all day every Friday to people development, coaching and mentoring—either one-on-one or with a

group. It's important for those in the organization to know that leadership is committed to their development. I can see people appreciate my devotion because of the many employees who seek me out for advice. Being a mentor not only helps to develop in-house staff, but also to recruit top-tier talent.

How Staff Development Helps Business

I've also created developmental rotations, which place technology people in business roles for six to nine months so they can get closer to that business. One gentleman worked in IT delivering database systems for the pharmacogenomics team, which focuses on the influence of genetics on drug response. We assigned him to their laboratory. He learned how to use their equipment, such as how to run DNA scans. When he came back to IT, he had a much better understanding about what he should be doing with their IT systems.

When we focus on developing employees, we demonstrate how their technical savvy, business understanding, leadership and ability to understand and elicit change are critical to business success.

When IT staff do such rotations, we see a whole change in their approach to their jobs because they saw first-hand the sense of urgency that business has and where their real priorities are. Benefits such as cost reductions, increases in efficiency and simplification of processes come out of that experience, helping the company overall.

Meanwhile, managers in the company see these employees as prime candidates to export out of IT. Ten years ago, if you were in IT, you were just in IT—not part of the business. But when we focus on developing employees, we demonstrate how their technical savvy, business understanding, leadership and ability to understand and elicit change are critical to business success.

I've also had businesspeople come over to IT. We don't just stick them on a computer and make them crunch out code; I like to teach them how to do IT project management so they can understand what it takes to deliver an IT system.

Become a Talent Magnet

When we focus on individuals' career development, we lift our organization's reputation externally. People want to work here because they see what we do to develop our employees. When you're competing for the best-in-class talent, our kind of culture is a differentiator.

I've had people turn down jobs at other companies with higher salaries to work with our group because they were looking for challenging work and opportunities for growth that would help their careers.

We need exceptional talent now to stop business decline. The pharmaceutical industry is going through a tough patch. Some leaders take the pessimistic path, focusing on what they can't do because of their budgets. I see this as the time where we need creativity. We can't afford to do things the way we used to.

Employees who are engaged in their careers and whose success is aligned with that of the company will help us to reform time-wasting activities, processes or systems. They'll help us to figure out which of the things we do that are really important. **CIO**

Karan Sorenson is VP and CIO at Johnson & Johnson Pharmaceutical Research & Development and a member of the CIO Executive Council. To comment on this article, go to www.cio.com/article/443763.



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COMMUTING TO GET AHEAD

64 percent of employees with the option to telecommute **don't** because they fear missing a promotion.

Steelcase

WIRELESS-WIDE WORLD?

10,382 Number of WLAN hotspots in **the U.S.** (as of Aug. 28, 2008)
33,117 Number of WLAN hotspots **worldwide**

Hotspot Locations

NO JETTING AROUND

79 percent of business managers feel pressured to cut their travel budgets because of the **RECESSION.**

Orbitz

Leaving Information BEHIND

Information industry jobs declined by **44,000** over the past **12 months.**

U.S. Bureau of Labor Statistics

Energy-Efficiency Disconnect

94% of IT executives with purchasing responsibility care about energy efficiency.

Only **34%** think it's a very important consideration when buying new equipment.

CDW

For the LOVE of Google

Search engine customer satisfaction scores, versus 2007

Google: up **10%**

Yahoo: down **2.5%**

MSN: no change

University of Michigan's American Customer Satisfaction Index



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Fusion is the process where cus-
tomer needs, dreams, and desires
bond with AMD's own passion
for engineering. It is Fusion that
fuels this collaborative process
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Looking back, Fusion has enabled
AMD to lead the industry with a legacy
of breakthroughs. We were the first to
achieve speeds of one billion clock cycles per
second. The first to integrate standard 32- and 64-bit
computing architectures. And the first to shatter the
teraflop-in-a-box performance ceiling. And more.

Today, Fusion is the catalyst for AMD's accelerated
computing model, harnessing the power of specialized
hardware to help boost performance and enhance
energy and cost efficiencies. It is a force that's already

changing the way we work, live, and play.

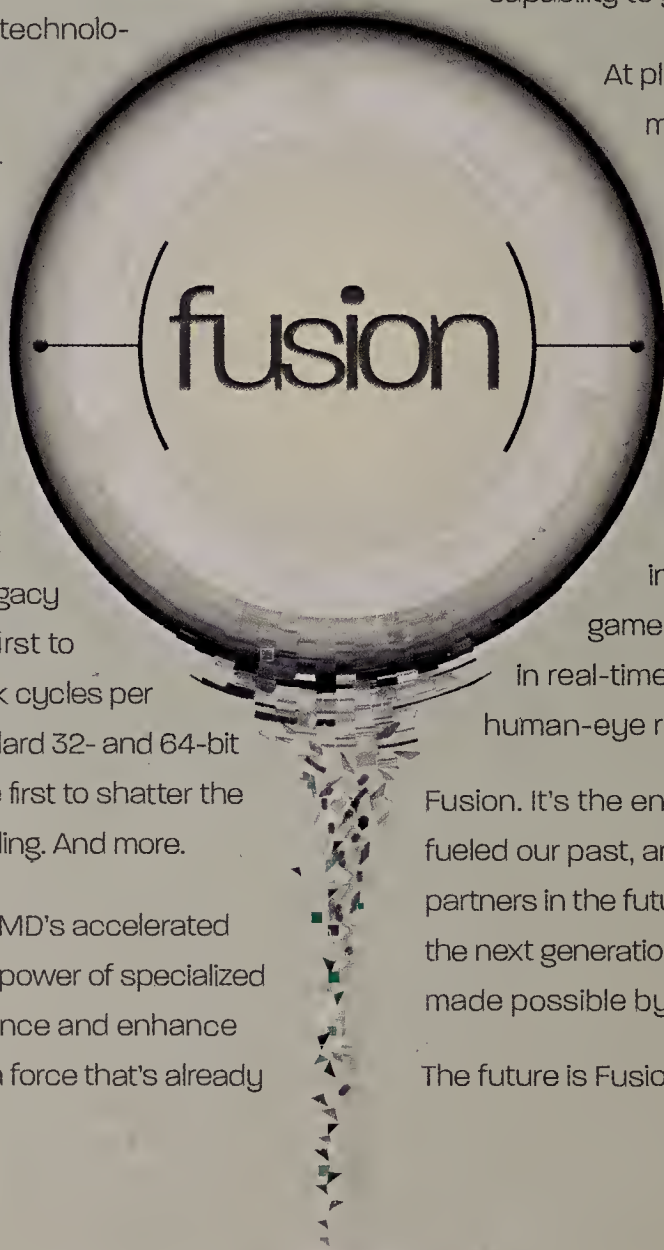
At work, Fusion is changing the data center forever.
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key workloads such as web services, database, and
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with low power requirements. And deploying special-
ized cores to bring parallel processing performance to
mainstream business applications.

At home, Fusion is bringing Hollywood to your family.
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enabled special effects wizards to render complex
animation in minutes instead of days. Enabling
innovations like AMD LIVE!™ to help people share
movies, videos, photos, and music on all the screens
of their lives. Allowing you to bring true HD computing
capability to your home and on the go.

At play, Fusion is the energy behind
many of today's most stunning PC
gaming experiences. Applying our
years of graphics processing
experience as the originators of
the first 3D GPU. Partnering to
enable platforms like Microsoft's
Xbox 360 and the Nintendo Wii.
Delivering big-screen imagery
and photorealism to the real-time
interactivity of your favorite video
game. Pushing the limits of performance
in real-time, 3D game play on our quest for
human-eye realism.

Fusion. It's the energy of innovation. It's what's
fueled our past, and what will drive our people and
partners in the future. To learn more about innovation,
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